

6-12-01

6-16-00

Weiner 09/879, 753

Page 1

=> file reg

FILE 'REGISTRY' ENTERED AT 11:01:21 ON 29 MAY 2003
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=> display history full 11-

FILE 'HCAPLUS' ENTERED AT 09:39:04 ON 29 MAY 2003

L1 14703 SEA SUZUKI Y?/AU
L2 1461 SEA SHIBUYA M?/AU
L3 70 SEA L1 AND L2
L4 412826 SEA ELECTROLY?
L5 188670 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY) (2A) (CE
LL OR CELLS) OR WETCELL? OR DRYCELL?
L6 506059 SEA (52 OR 72)/SC, SX
L7 10 SEA L3 AND L4
L8 36612 SEA ?VINYLIDEN?
L9 6 SEA L7 AND L8
L10 3 SEA L9 AND GEL?
SEL L10 1-3 RN

FILE 'REGISTRY' ENTERED AT 09:51:40 ON 29 MAY 2003

L11 49 SEA (96-49-1/BI OR 105-58-8/BI OR 12190-79-3/BI OR

L12 15 SEA L11 AND PMS/CI
E VINYLIDENE FLUORIDE/CN
L13 1 SEA "VINYLIDENE FLUORIDE"/CN
D RN
L14 1918 SEA 75-38-7/CRN
L15 8 SEA L12 AND L14
D L15 1-8 IDE
SEL L15 1-6 RN
L16 6 SEA (161109-32-6/BI OR 25684-81-5/BI OR 380481-15-2/BI
OR 380481-16-3/BI OR 380481-17-4/BI OR 380481-37-8/BI)

FILE 'HCAPLUS' ENTERED AT 09:59:39 ON 29 MAY 2003

L17 29 SEA L16
L18 5 SEA L17 AND (L4 OR L5 OR L6)

FILE 'LREGISTRY' ENTERED AT 10:02:32 ON 29 MAY 2003

L19 STR

FILE 'REGISTRY' ENTERED AT 10:24:54 ON 29 MAY 2003

L20 24 SEA SUB=L14 SSS SAM L19
L21 483 SEA SUB=L14 SSS FUL L19
SAV L21 WEI753/A
E HEXAFLUOROPROPYLENE/CN
L22 1 SEA HEXAFLUOROPROPYLENE/CN

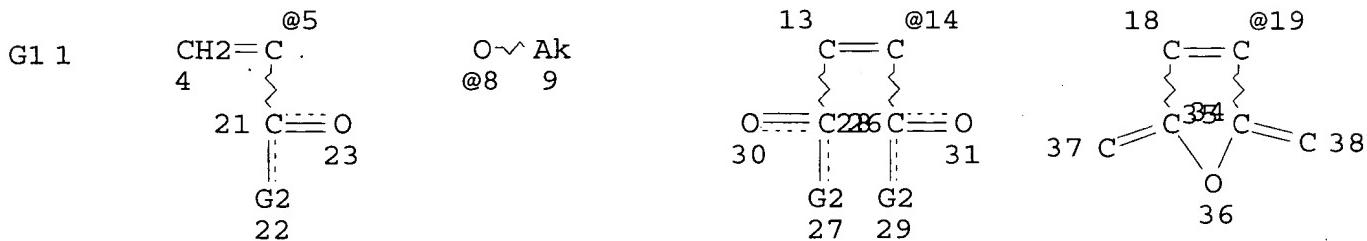
D RN
L23 1436 SEA 116-15-4/CRN
L24 533 SEA L23 AND L14
L25 157 SEA L24 AND L21

FILE 'LREGISTRY' ENTERED AT 10:30:24 ON 29 MAY 2003
L26 STR L19
E MALEIC ANHYDRIDE/CN
L27 1 SEA "MALEIC ANHYDRIDE"/CN
D RN

FILE 'REGISTRY' ENTERED AT 10:38:00 ON 29 MAY 2003
L28 22071 SEA 108-31-6/CRN
L29 9 SEA L14 AND L28
L30 2 SEA SUB=L21 SSS SAM L26
L31 29 SEA SUB=L21 SSS FUL L26
SAV L31 WEI753A/A

FILE 'HCA' ENTERED AT 10:42:55 ON 29 MAY 2003
L32 302 SEA L21
L33 8 SEA L29
L34 20 SEA L31
L35 87 SEA L25
L36 4 SEA L33 AND (L4 OR L5 OR L6)
L37 13 SEA L34 AND (L4 OR L5 OR L6)
L38 11 SEA L35 AND (L4 OR L5 OR L6)
L39 28 SEA L32 AND L4
L40 35 SEA L32 AND L5
L41 37 SEA L32 AND L6
L42 25 SEA L39 AND (L40 OR L41)
L43 473151 SEA GEL OR GELS OR GELLED OR GELLING# OR GELATION? OR
GELATINOUS?
6 SEA L42 AND L43
14 SEA L18 OR L36 OR L44
10 SEA (L37 OR L38) NOT L45
14 SEA L42 NOT (L45 OR L46)
24 SEA L17 NOT (L45 OR L46 OR L47)

=> d 131 que stat
L14 1918 SEA FILE=REGISTRY 75-38-7/CRN
L19 STR



VAR G1=5/14/19

VAR G2=OH/8

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 9

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 9

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

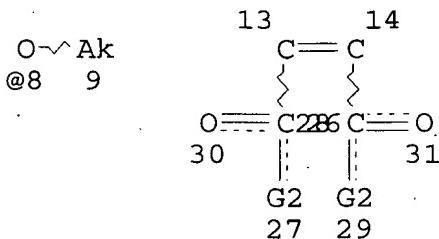
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 23

STEREO ATTRIBUTES: NONE

L21 483 SEA FILE=REGISTRY SUB=L14 SSS FUL L19

L26 STR



VAR G2=OH/8

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 9

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 9

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE

L31 29 SEA FILE=REGISTRY SUB=L21 SSS FUL L26

100.0% PROCESSED 58 ITERATIONS

29 ANSWERS

SEARCH TIME: 00.00.01

=> file hca

FILE 'HCA' ENTERED AT 11:02:25 ON 29 MAY 2003

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

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=> d 145 1-14 cbib abs hitstr hitind

L45 ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS
 138:240658 Polymer **gel electrolytes** and lithium
 secondary **battery**.. Tokai, Yusuke; Mizuguchi, Akio;
 Higami, Akihiro (Mitsubishi Materials Corp., Japan). Jpn. Kokai
 Tokkyo Koho JP 2003077539 A2 20030314, 9 pp. (Japanese). CODEN:
 JKXXAF. APPLICATION: JP 2001-266910 20010904.

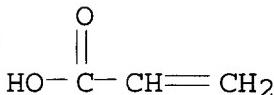
AB The disclosed polymer **gel electrolyte** comprises
electrolyte soln. and a polymer **gel** consisting of
 a matrix polymer and different polymer particles dispersed in the
 matrix polymer. Sheet shaped lithium secondary **batteries**
 which use the above **electrolyte** is also disclosed. The
electrolyte show high ion cond. and good mech. property..

IT 109955-89-7, Acrylic acid-vinylidene fluoride graft
 copolymer
 (lithium secondary **battery** polymer **gel**
electrolyte compn. contg.)

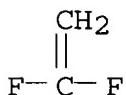
RN 109955-89-7 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA
 INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2

CM 2

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M010-40
 ICS H01B001-06; H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

ST polymer **gel electrolyte** lithium secondary
battery

IT Fluoropolymers, uses
 (lithium secondary **battery** polymer **gel**
electrolyte compn. contg.)

IT Secondary **batteries**

(lithium; polymer **gel electrolyte** compns.
for)

IT **Electrolytes**

(polymer **gel**; lithium secondary **batteries**

with polymer particles dispersed in matrix polymer)

IT 9011-17-0, Kynar 2810 24937-79-9, Poly(vinylidene fluoride)
109955-89-7, Acrylic acid-vinylidene fluoride graft
copolymer

(lithium secondary **battery** polymer **gel**
electrolyte compn. contg.)

L45 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS

138:58932 Lithium-ion **battery** with polymer **electrolyte**

Mori, Takaki; Koike, Takeshi; Lee, Hyung-bok (Samsung Sdi Co.,
Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2002197536 A1 20021226,
11 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-124263
20020418. PRIORITY: KR 2001-35509 20010621.

AB The title **battery** comprises a cathode, an anode, a porous
separator disposed between the cathode and anode, a first polymeric
electrolyte positioned at the one surface of the separator
and in contact with the cathode, and a second polymeric
electrolyte positioned at the other surface of the separator
and in contact with the anode. The first and second polymeric
electrolytes use host polymers which produce different pH
levels in aq. solns. when extd. with water. A method for prepn. of
the title **battery** comprises (a) forming a first polymeric
electrolyte layer having a first host polymer on a side of a
separator or a cathode, (b) forming a second polymeric
electrolyte layer having a second host polymer on a side of
a separator or an anode, (c) **gelling** the first and second
polymeric **electrolyte** layers, and (d) placing the
gelled separator between a cathode and anode or by placing
the separator between the **gelled** first and second
polymeric **electrolyte** layers of the cathode and the anode.
The lithium-ion **batteries** with the above polymer
electrolytes have high discharge capacities that are
maintained even with repeated cycles of charging and discharging,
thereby improving cycle life characteristics of the
batteries.

IT 162817-95-0P 219748-63-7P

(lithium-ion **batteries** with polymer
electrolytes)

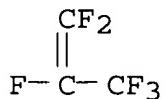
RN 162817-95-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene and
1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

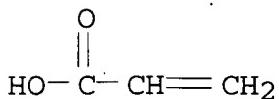
CM 1

CRN 116-15-4

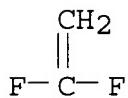
CMF C3 F6



CM 2

CRN 79-10-7
CMF C3 H4 O2

CM 3

CRN 75-38-7
CMF C2 H2 F2

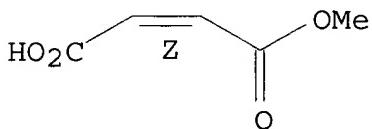
RN 219748-63-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA
INDEX NAME)

CM 1

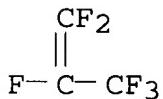
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.

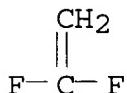


CM 2

CRN 116-15-4
CMF C3 F6



CM 3

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M010-40
 ICS H01M010-04
 NCL 429309000; 429316000; 429317000; 429303000; 029623100
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 38
 ST polymer **electrolyte** lithium ion **battery**
 IT Polymer **electrolytes**
 (lithium-ion **batteries** with polymer **electrolyte**
 of)
 IT **Battery electrolytes**
 Secondary batteries
 (lithium-ion **batteries** with polymer
electrolytes)
 IT 9011-17-0P, Hexafluoro propylene-vinylidene fluoride copolymer
 (lithium-ion **batteries** with polymer **electrolyte**
 of)
 IT 162817-95-0P 215653-67-1P 219748-63-7P
 479256-68-3P 479256-69-4P
 (lithium-ion **batteries** with polymer
electrolytes)

L45 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS
 137:372562 Polymer-**electrolyte battery** with
gelled electrolyte having resistance to oxidation
 and reduction. Oba, Kazuhiro (Sony Corp., Japan). Jpn. Kokai
 Tokkyo Koho JP 2002334719 A2 20021122, 14 pp. (Japanese). CODEN:
 JKXXAF. APPLICATION: JP 2001-136485 20010507.

AB The title **battery** is equipped with a solid
electrolyte laminated between a cathode and an anode, where
 a solid **electrolyte** having high oxidn. resistance is
 placed at cathode side and a solid **electrolyte** having high
 redn. resistance is placed at anode side. The solid
electrolyte may be a **gelled electrolyte**
 contg. a nonaq. solvent having high oxidn. resistance, where its
 concn. is lowered from the cathode side to the anode side.

Alternatively, the solid **electrolyte** contains a nonaq. solvent having high redn. resistance at the anode side. The solid **electrolyte** may use a polymer having high oxidn. resistance placed at cathode and a polymer having high redn. resistance placed at anode side. The **battery** has high thermal stability and long cycle life.

IT 61778-05-0D, Acrylic acid-vinylidene fluoride copolymer, lithium complexes

(gelled polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

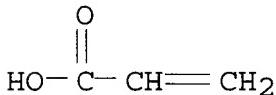
RN 61778-05-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

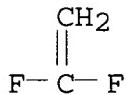
CMF C3 H4 O2



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST gelled polymer **electrolyte** solvent lithium **battery**

IT Battery **electrolytes**
Polymer **electrolytes**

(gelled polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

IT Secondary **batteries**
(lithium; gelled polymer **electrolyte** contg.

combined solvent for resistance to oxidn. and redn. in **battery**)

IT 21324-40-3, Lithium hexafluorophosphate

(**electrolyte**; gelled polymer **electrolyte** contg. combined solvent for resistance to

oxidn. and redn. in **battery**)

IT 9011-17-0D, Hexafluoropropylene-vinylidene fluoride copolymer, lithium complexes 25014-41-9D, Polyacrylonitrile, lithium complexes 61778-05-0D, Acrylic acid-vinylidene fluoride copolymer, lithium complexes

(gelled polymer **electrolyte** contg. combined

solvent for resistance to oxidn. and redn. in **battery**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 105-54-4, Ethyl butyrate 105-66-8, Butyric acid propyl ester 108-29-2, .gamma.-Valerolactone 108-32-7, Propylene carbonate (solvent; gelled polymer **electrolyte** contg. combined solvent for resistance to oxidn. and redn. in **battery**)

L45 ANSWER 4 OF 14 HCA COPYRIGHT 2003 ACS

137:203964 Fluoropolymer **gel** composition for **electrolyte** in lithium ion **battery**. Kanega, Atsushi; Enokida, Takashi; Nakamura, Seiichi (Nippon Mectron Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002249589 A2 20020906, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-47510 20010223.

AB The title compn. contains a carboxyl group- and F-contg. copolymer comprising vinylidene fluoride 80-98, fluoroolefin monomer other than vinylidene fluoride 0-20, and F-contg. unsatd. carboxylic acid monomer R1R2C:CR3CO2H (R1-R3 = H, F, or C1-6 halogen-substituted alkyl; .gtoreq.1 of R1-R3 is F or halogen-substituted alkyl) 0.1-20 mol.% and a Li salt-dissolving org. solvent. The title Li ion **battery** is equipped with a **gel** polymer **electrolyte** contg. the above compn. and a Li salt. The compn. has high heat resistance and swelling property.

IT 453568-91-7DP, lithium complexes 453568-92-8DP, lithium complexes 453568-93-9DP, lithium complexes 453568-94-0DP, lithium complexes (fluoropolymer **gel** compn. for **electrolyte** in lithium ion **battery**)

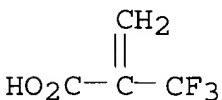
RN 453568-91-7 HCA

CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with 1,1-difluoroethene and 1,1,2,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

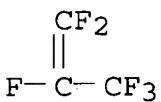
CRN 381-98-6

CMF C4 H3 F3 O2



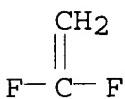
CM 2

CRN 116-15-4
 CMF C3 F6



CM 3

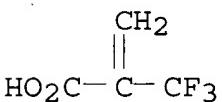
CRN 75-38-7
 CMF C2 H2 F2



RN 453568-92-8 HCA
 CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with
 chlorotrifluoroethene, 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-
 1-propene (9CI) (CA INDEX NAME)

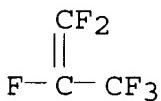
CM 1

CRN 381-98-6
 CMF C4 H3 F3 O2



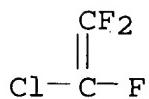
CM 2

CRN 116-15-4
 CMF C3 F6

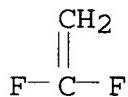


CM 3

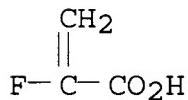
CRN 79-38-9
 CMF C2 Cl F3



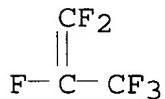
CM 4

CRN 75-38-7
CMF C2 H2 F2RN 453568-93-9 HCA
CN 2-Propenoic acid, 2-fluoro-, polymer with chlorotrifluoroethene,
1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA
INDEX NAME)

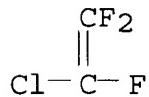
CM 1

CRN 430-99-9
CMF C3 H3 F O2

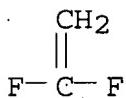
CM 2

CRN 116-15-4
CMF C3 F6

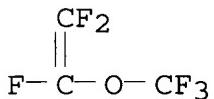
CM 3

CRN 79-38-9
CMF C2 Cl F3

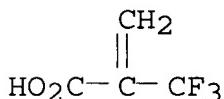
CM 4

CRN 75-38-7
CMF C2 H2 F2RN 453568-94-0 HCA
CN 2-Propenoic acid, 2-(trifluoromethyl)-, polymer with
chlorotrifluoroethene, 1,1-difluoroethene and
trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

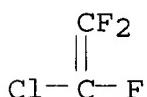
CM 1

CRN 1187-93-5
CMF C3 F6 O

CM 2

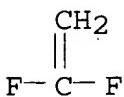
CRN 381-98-6
CMF C4 H3 F3 O2

CM 3

CRN 79-38-9
CMF C2 Cl F3

CM 4

CRN 75-38-7
CMF C2 H2 F2



- IC ICM C08J003-075
ICS C08K003-16; C08L027-16; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST carboxyl fluoropolymer **gel** compn **electrolyte**
lithium **battery**
IT Fluoropolymers, uses
(carboxy-contg., lithium complexes; fluoropolymer **gel**
compn. for **electrolyte** in lithium ion **battery**
)
IT **Battery electrolytes**
Gels
(fluoropolymer **gel** compn. for **electrolyte** in
lithium ion **battery**)
IT Secondary **batteries**
(lithium; fluoropolymer **gel** compn. for
electrolyte in lithium ion **battery**)
IT 7439-93-2DP, Lithium, carboxyl group-contg. fluoropolymer complexes
453568-91-7DP, lithium complexes **453568-92-8DP**,
lithium complexes **453568-93-9DP**, lithium complexes
453568-94-0DP, lithium complexes
(fluoropolymer **gel** compn. for **electrolyte** in
lithium ion **battery**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(solvent; fluoropolymer **gel** compn. for
electrolyte in lithium ion **battery**)

L45 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS
136:56445 Methods for preparation of microporous solid
electrolytes for rechargeable **batteries**. Jang,
Dong Hun; Kim, Sa Heum; Kim, Han Jun (Finecell Co., Ltd., S. Korea).
PCT Int. Appl. WO 2001099220 A1 20011227, 45 pp. DESIGNATED
STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2.
APPLICATION: WO 2000-KR482 20000524.

AB The present invention is directed to an **electrolyte** film
and/or a solid **electrolyte**, having a microporous
structure, for a rechargeable cell. According to the present
invention, when prep. the **electrolyte** film and/or the
solid **electrolyte**, an inorg. absorbent is added in the
amt. of more than 70% by wt. in a polymer matrix to prevent the
porous structure from being destructed at the cell-assembling
process such as lamination or pressing, whereby the absorbing power

of a liq. **electrolyte** to the solid **electrolyte** film and the ionic cond. can be maintained. The inorg. absorbent contained over the specific amt., together with the microporous structure, improves the capacity of absorbing the liq. **electrolyte** and, in particular, works as a structure element of increasing the mech. strength of **electrolyte** film and/or solid **electrolyte**. Therefore, the good ionic cond. can be maintained even after the assembly of cell.

IT 114481-92-4, Maleic anhydride-vinylidene fluoride copolymer
(methods for prepn. of microporous solid **electrolytes**
for rechargeable batteries)

RN 114481-92-4 HCA

CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 108-31-6

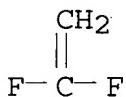
CMF C4 H2 O3



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST battery microporous solid **electrolyte** prepn

IT Polyvinyl acetals

(formals; methods for prepn. of microporous solid **electrolytes** for rechargeable batteries)

IT Molecular sieves

(mesoporous; methods for prepn. of microporous solid **electrolytes** for rechargeable batteries)

IT **Battery electrolytes**

Ionic conductivity

Secondary batteries

(methods for prepn. of microporous solid **electrolytes** for rechargeable batteries)

- IT Carbon black, uses
 Clay minerals
 EPDM rubber
 Fluoropolymers, uses
 Mica-group minerals, uses
 Nitrile rubber, uses
 Phyllosilicate minerals
 Polycarbonates, uses
 Polycarbosilanes
 Polyethers, uses
 Polyimides, uses
 Polymers, uses
 Polyoxyalkylenes, uses
 Polysulfones, uses
 Polyurethanes, uses
 Zeolites (synthetic), uses
 (methods for prepn. of microporous solid **electrolytes**
 for rechargeable **batteries**)
- IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 111-96-6, Diglyme 112-49-2, Triglyme 126-33-0, Sulfolane
 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane 556-65-0, Lithium
 thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
 carbonate 4437-85-8, Butylene carbonate 7429-90-5, Aluminum,
 uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses
 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese oxide
 limn₂O₄ 12190-79-3, Cobalt lithium oxide colio₂ 14283-07-9,
 Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 triflate 90076-65-6 132404-42-3
 (methods for prepn. of microporous solid **electrolytes**
 for rechargeable **batteries**)
- IT 67-63-0, Isopropanol, uses 79-41-4D, Methacrylic acid, esters,
 polymers 1309-48-4, Magnesium oxide, uses 1318-93-0,
 Montmorillonite, uses 9002-86-2, Polyvinyl chloride 9002-88-4,
 Polyethylene 9002-89-5, Polyvinyl alcohol 9002-93-1, Triton x
 100 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene
 9003-29-6, Polybutylene 9011-14-7, Pmma 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3,
 Cellulose triacetate 12026-53-8, Paragonite 17831-71-9,
 Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene
 fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo
 31900-57-9, Polydimethylsiloxane **114481-92-4**, Maleic
 anhydride-vinylidene fluoride copolymer
 (methods for prepn. of microporous solid **electrolytes**
 for rechargeable **batteries**)
- IT 56-81-5, Glycerol, uses 60-29-7, Ether, uses 64-17-5, Ethanol,
 uses 67-64-1, Acetone, uses 67-66-3, Chloroform, uses 67-68-5,
 Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses
 75-09-2, Dichloromethane, uses 96-47-9, 2-Methyltetrahydrofuran
 107-21-1, Ethylene glycol, uses 108-94-1, Cyclohexanone, uses
 109-99-9, Thf, uses 123-91-1, Dioxane, uses 127-19-5,

Dimethylacetamide 141-78-6, Ethyl acetate, uses 680-31-9,
 Hexamethylphosphoramide, uses 872-50-4, n-Methylpyrrolidone, uses
 7732-18-5, Water, uses 25917-35-5, Hexanol 30899-19-5, Pentanol
 35296-72-1, Butanol

(methods for prepn. of microporous solid **electrolytes**
 for rechargeable **batteries**)

- IT 9003-18-3
 (nitrile rubber, methods for prepn. of microporous solid
electrolytes for rechargeable **batteries**)
 IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
 (porous; methods for prepn. of microporous solid
electrolytes for rechargeable **batteries**)

L45 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS

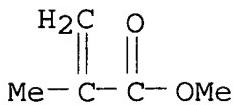
136:40202 Nonaqueous **battery** using **gel**
electrolyte obtained by **gelling** nonaqueous
electrolyte solution. Suzuki, Yusuke; Shibuya, Mashio (Sony
 Corporation, Japan). Eur. Pat. Appl. EP 1164653 A2 20011219, 28 pp.
 DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,
 LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:
 EPXXDW. APPLICATION: EP 2001-114359 20010613. PRIORITY: JP
 2000-182276 20000616.

AB In a **gel electrolyte**, nonaq. **electrolyte**
 soln. obtained by dissolving **electrolyte** salt contg. Li in
 a nonaq. solvent is **gelled** by a matrix polymer including a
 copolymer as a main component which contains vinylidene fluoride as
 a monomer unit. The copolymer employed as the matrix polymer is
 carboxylic acid modified polyvinylidene fluoride into which a
 structure formed by esterifying a part or all of a carboxyl group, a
 carboxylic acid or an acetic anhydride structure is introduced. The
 carboxylic acid modified polyvinylidene fluoride can dissolve and
 retain therein a solvent of low viscosity having a low b.p.
 Therefore, the carboxylic acid modified polyvinylidene fluoride is
 used as a matrix polymer to improve the ionic cond. of the
gel electrolyte at low temp. Thus, a low temp.
 characteristic is improved and a cyclic characteristic and a load
 characteristic are also improved.

IT 25684-81-5, Methyl methacrylate-vinylidene fluoride
 copolymer 161109-32-6, Methyl maleate-vinylidene fluoride
 copolymer 380481-15-2, Ethyl maleate-vinylidene fluoride
 copolymer 380481-16-3, Monopropyl maleate-vinylidene
 fluoride copolymer 380481-17-4, Monobutyl
 maleate-vinylidene fluoride copolymer 380481-37-8,
 Monoethyl maleate-vinylidene fluoride copolymer
 (nonaq. **battery** using **gel electrolyte**
 obtained by **gelling** nonaq. **electrolyte** soln.)

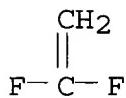
RN 25684-81-5 HCA
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 1,1-difluoroethene (9CI) (CA INDEX NAME)

CRN 80-62-6
CMF C5 H8 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

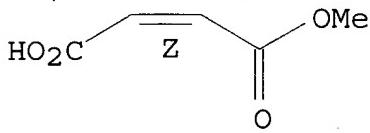


RN 161109-32-6 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

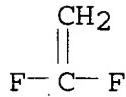
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

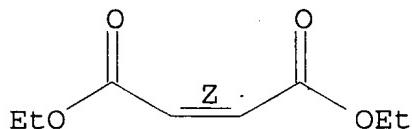


RN 380481-15-2 HCA
CN 2-Butenedioic acid (2Z)-, diethyl ester, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

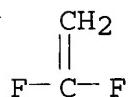
CRN 141-05-9
 CMF C8 H12 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
 CMF C2 H2 F2

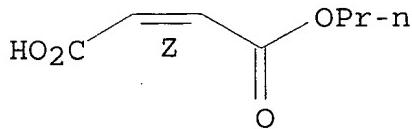


RN 380481-16-3 HCA
 CN 2-Butenedioic acid (2Z)-, monopropyl ester, polymer with
 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

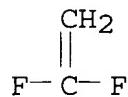
CRN 925-03-1
 CMF C7 H10 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
 CMF C2 H2 F2



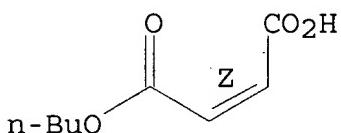
RN 380481-17-4 HCA

CN 2-Butenedioic acid (2Z)-, monobutyl ester, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

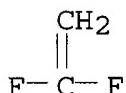
CRN 925-21-3
CMF C8 H12 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



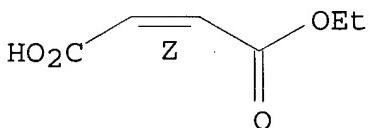
RN 380481-37-8 HCA

CN 2-Butenedioic acid (2Z)-, monoethyl ester, polymer with
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

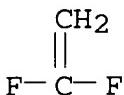
CRN 3990-03-2
CMF C6 H8 O4.

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2



- IC ICM H01M010-40
ICS H01M006-22
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- ST **battery** nonaq **gel electrolyte**
- IT Transition metal oxides
(lithiated; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT Secondary **batteries**
(lithium; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT Polymerization
(matrix; nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT **Battery electrolytes**
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT Carbonaceous materials (technological products)
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT Fluoropolymers, uses
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT Lithium alloy, base
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT 75-38-7D, polymers with maleate salts and maleic anhydride 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-31-6D, 2,5-Furandione, polymers with maleate salts and vinylidene fluoride, uses 110-16-7D, Maleate-maleic anhydride-vinylidene fluoride copolymer, salts, polymers with maleic anhydride and vinylidene fluoride, uses 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 380481-18-5, Cobalt lithium oxide (Co0.2Li0.7O2) 380481-19-6
(nonaq. **battery** using **gel electrolyte** obtained by **gelling** nonaq. **electrolyte** soln.)
- IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 25684-81-5, Methyl methacrylate-vinylidene fluoride copolymer 161109-32-6, Methyl maleate-vinylidene fluoride copolymer 380481-15-2,

Ethyl maleate-vinylidene fluoride copolymer 380481-16-3,
 Monopropyl maleate-vinylidene fluoride copolymer 380481-17-4
 , Monobutyl maleate-vinylidene fluoride copolymer
 380481-37-8, Monoethyl maleate-vinylidene fluoride copolymer
 (nonaq. **battery** using **gel electrolyte**
 obtained by gelling nonaq. **electrolyte** soln.)

IT 24937-79-9, Pvdf
 (nonaq. **battery** using **gel electrolyte**
 obtained by gelling nonaq. **electrolyte** soln.)

L45 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS

133:46207 Microporous solid **electrolytes** for lithium secondary
batteries. Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun;
 Hong, Sung Min (Finecell Co., Ltd., S. Korea). PCT Int. Appl. WO
 2000038263 A1 20000629, 46 pp. DESIGNATED STATES: W: CN, JP, US;
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
 PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-KR798
 19991221. PRIORITY: KR 1998-57031 19981222.

AB The present invention relates to a solid **electrolyte**
 having a good cond. to lithium ion by allowing the liq. components
 and lithium salts to be absorbed into the **electrolyte** film
 contg. an absorbent added at the time of its prepn. and having a
 porosity, a process for prep. the same and a rechargeable lithium
 cell using the same as an **electrolyte**. As the absorbent,
 inorg. materials having not more than 40 .mu.m of particle size can
 be used. As the polymer binder, any binder whose solv. against the
 liq. **electrolyte** is small can be used. A wet process can
 introduce the porous structure of the **electrolyte** film.
 The solid **electrolyte** according to the present invention
 has the ionic cond. of more than approx. 1 to 3 x 10⁻³ S/cm at room
 temp. and low reactivity to lithium metal. The cell is fabricated
 from the solid **electrolyte** together with electrodes by
 lamination or pressing methods and, the liq. **electrolyte**,
 which is decompd. by moisture, is introduced to a cell just before
 packaging. Therefore, the solid **electrolyte** according to
 the present invention is not affected by the humidity and temp.
 conditions during the manufg. of the **electrolyte** film. In
 addn., the solid **electrolyte** according to the present
 invention has high thermal, mech. and electrochem. stability; and
 thus is suitable as an **electrolyte** for rechargeable
 lithium cells.

IT 114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer
 (binder; microporous solid **electrolytes** for lithium
 secondary **batteries**)

RN 114481-92-4 HCA

CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX
 NAME)

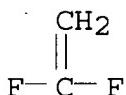
CM 1

CRN 108-31-6

CMF C4 H2 O3



CM 2

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M010-36
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST lithium **battery** microporous solid **electrolyte**
 IT Cellulose pulp
 Cork
 (absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT Polyurethanes, uses
 Zeolites (synthetic), uses
 (absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT Synthetic rubber, uses
 (acrylic-acrylonitrile-butadiene, binder; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT EPDM rubber
 Fluoropolymers, uses
 Polycarbonates, uses
 Polyethers, uses
 Polyimides, uses
 Polymers, uses
 Polyoxyalkylenes, uses
 Polysulfones, uses
 (binder; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT Wood
 (flour, absorbent; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT Polyvinyl acetals
 (formals, binder; microporous solid **electrolytes** for lithium secondary **batteries**)
 IT Secondary **batteries**
 (lithium; microporous solid **electrolytes** for lithium secondary **batteries**)

- IT Molecular sieves
 (mesoporous, absorbent; microporous solid **electrolytes**
 for lithium secondary **batteries**)
- IT Absorbents
Battery electrolytes
 (microporous solid **electrolytes** for lithium secondary
batteries)
- IT Clays, uses
 Mica-group minerals, uses
 Minerals, uses
 (particles, absorbent; microporous solid **electrolytes**
 for lithium secondary **batteries**)
- IT Binders
 (polymers; microporous solid **electrolytes** for lithium
 secondary **batteries**)
- IT 9002-88-4 9003-07-0, Polypropylene 9003-53-6, Polystyrene
 9004-34-6, Cellulose, uses
 (absorbent; microporous solid **electrolytes** for lithium
 secondary **batteries**)
- IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8,
 2-Propenoic acid, methyl ester, homopolymer 9003-27-4,
 Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene
 fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose
 triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9,
 Tetraethyleneglycol diacrylate 24937-79-9, Pvdf 25014-41-9,
 Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene)
114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer
 (binder; microporous solid **electrolytes** for lithium
 secondary **batteries**)
- IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-
 Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1,
 Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
 Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2,
 Triglyme 126-33-0 143-24-8, Tetraglyme 505-22-6, 1,3-Dioxane
 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate
 623-53-0, Ethyl methyl carbonate 7782-42-5, Graphite, uses
 7791-03-9, Lithium perchlorate 12162-79-7, Lithium manganese oxide
 limno2 12190-79-3, Cobalt lithium oxide colio2 14283-07-9,
 Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 triflate 90076-65-6 132404-42-3
 (microporous solid **electrolytes** for lithium secondary
batteries)
- IT 56-81-5, 1,2,3-Propanetriol, uses 60-29-7, Ether, uses 64-17-5,
 Ethanol, uses 67-64-1, Acetone, uses 67-66-3, uses 71-36-3,
 Butanol, uses 75-05-8, Acetonitrile, uses 75-09-2,
 Dichloromethane, uses 107-21-1, 1,2-Ethanediol, uses 108-94-1,
 Cyclohexanone, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl
 acetamide 141-78-6, Acetic acid ethyl ester, uses 680-31-9,
 Hexamethylphosphoramide, uses 872-50-4, uses 7732-18-5, Water,
 uses 25917-35-5, Hexanol 30899-19-5, Pentanol
 (microporous solid **electrolytes** for lithium secondary

batteries)

IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
 (particles, absorbent; microporous solid **electrolytes**
 for lithium secondary **batteries**)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
 (porous, absorbent; microporous solid **electrolytes** for
 lithium secondary **batteries**)

L45 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS

133:46206 Solid **electrolytes** using absorbent for rechargeable lithium **batteries**. Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh, Seung Mo (Finecell Co., Ltd., S. Korea). PCT Int. Appl. WO 2000038262 A1 20000629, 37 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-KR797 19991221. PRIORITY: KR 1998-57030 19981222.

AB The present invention relates to a solid **electrolyte** having cond. to lithium ion by providing spaces for liq. component and lithium salts to be absorbed by way of introducing an absorbent to the inside of an **electrolyte** film, a process for prep. the same and a rechargeable lithium cell using the same. As the absorbent, polymers or inorg. materials having not more than 40 .mu.m of particle size can be used. As the polymer binder, any binder whose solv. against the liq. **electrolyte** is small can be used. The solid **electrolyte** according to the present invention has the ionic cond. of more than approx. 10-4 S/cm at room temp. The cell is fabricated from the solid **electrolyte** together with electrodes by lamination or pressing methods. The liq. **electrolyte**, which is decompd. by moisture, is introduced to a cell just before packaging. Therefore, the solid **electrolyte** according to the present invention is not affected by the humidity and temp. conditions during the manufg. of the **electrolyte** film. In addn., the solid **electrolyte** according to the present invention has high mech. strength and little reactivity to lithium metal, and thus is suitable as an **electrolyte** for rechargeable lithium cells.

IT 114481-92-4, Maleic anhydride-vinylidene fluoride copolymer
 (solid **electrolytes** using absorbent for rechargeable lithium **batteries**)

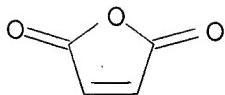
RN 114481-92-4 HCA

CN 2,5-Furandione, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

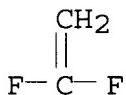
CM 1

CRN 108-31-6

CMF C4 H2 O3



CM 2

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M010-36
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST lithium **battery electrolyte** absorbent
 IT Polysiloxanes, uses
 (Me; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Synthetic rubber, uses
 (acrylonitrile-butylidene; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Wood
 (flour; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Polyvinyl acetals
 (formals; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Secondary **batteries**
 (lithium; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Molecular sieves
 (mesoporous; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Clays, uses
 Mica-group minerals, uses
 Minerals, uses
 Zeolites (synthetic), uses
 (particles; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Cork
 (powder; solid **electrolytes** using absorbent for rechargeable lithium **batteries**)
 IT Absorbents
 Battery electrolytes
 Cellulose pulp

- (solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Carbon black, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT EPDM rubber
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Fluoropolymers, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Nitrile rubber, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polycarbonates, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polyethers, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polyimides, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polymers, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polyoxyalkylenes, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polysulfones, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT Polyurethanes, uses
(solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 9003-18-3
(nitrile rubber, solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 1318-93-0, Montmorillonite, uses 12026-53-8, Paragonite
(particles; solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(porous, particles; solid electrolytes using absorbent for rechargeable lithium batteries)
- IT 67-68-5, Dmso, uses 68-12-2, uses 96-47-9, 2-
Methyltetrahydrofuran 96-48-0, .gamma.-Butyrolactone 96-49-1,
Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 109-99-9, uses 111-96-6, Diglyme 112-49-2,
Triglyme 126-33-0 143-24-8, Tetraglyme 556-65-0, Lithium
thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
carbonate 646-06-0, 1,3-Dioxolane 7782-42-5, Graphite, uses
7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide

colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 132404-42-3
 (solid **electrolytes** using absorbent for rechargeable lithium **batteries**)

IT 9002-86-2, Polyvinyl chloride 9002-88-4 9002-89-5, Polyvinyl alcohol 9003-07-0, Polypropylene 9003-27-4, Polyisobutylene 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3, Cellulose triacetate 17831-71-9, Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-vinylidene fluoride copolymer
 (solid **electrolytes** using absorbent for rechargeable lithium **batteries**)

L45 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS

130:111360 Vinylidene fluoride copolymer for **gel-form solid electrolyte** formation in **battery**. Katsurao, Takumi; Horie, Katsuo; Nagai, Aisaku; Ichikawa, Yukio (Kureha Kagaku Kogyo Kabushiki Kaisha, Japan). PCT Int. Appl. WO 9905191 A1 19990204, 37 pp. DESIGNATED STATES: W: CA, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1998-JP3292 19980723. PRIORITY: JP 1997-212726 19970724.

AB A solid polymer **electrolyte** having improved ionic cond., adhesion to a collector base, and heat resistance, useful for improving the properties of non-water-base **batteries** such as lithium ion **batteries**, is formed from a crosslinked vinylidene fluoride copolymer comprising 50 to 97 mol% of vinylidene fluoride units and 0.1 to 5 mol% of units derived from either a monoester of an unsatd. dibasic acid or an epoxy vinyl monomer. Thus, monomethyl maleate 8.0 g, vinylidene fluoride 372 g, and hexafluoropropene 28 g was suspension-copolymerd., then 10 g of the copolymer was dissolved in THF 90 g, and 1.5 g of crosslinking agent hexamethylenediamine was added, which was mixed with 4.5 g LiPF6 in soln., applied on glass plate, dried, to give a solid **electrolyte** film, showing ionic cond. 7.9×10^{-3} S/cm and shape-maintaining temp. 100.degree..

IT 219748-63-7P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene copolymer 219748-65-9P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-hexamethylenediamine copolymer 219748-67-1P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-triallyl isocyanurate copolymer
 (vinylidene fluoride copolymer for **gel-form solid electrolyte** in **battery**)

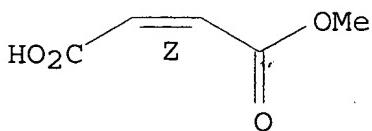
RN 219748-63-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene and 1,1,2,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

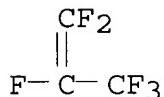
CM 1

CRN 3052-50-4
CMF C5 H6 O4

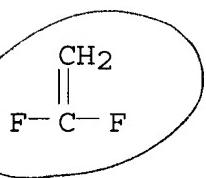
Double bond geometry as shown.



CM 2

CRN 116-15-4
CMF C3 F6

CM 3

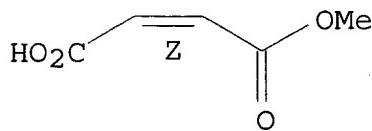
CRN 75-38-7
CMF C2 H2 F2

RN 219748-65-9 HCA
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and
 1,6-hexanediamine (9CI) (CA INDEX NAME)

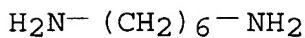
CM 1

CRN 3052-50-4
CMF C5 H6 O4

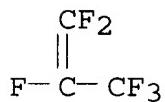
Double bond geometry as shown.



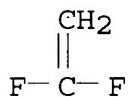
CM 2

CRN 124-09-4
CMF C6 H16 N2

CM 3

CRN 116-15-4
CMF C3 F6

CM 4

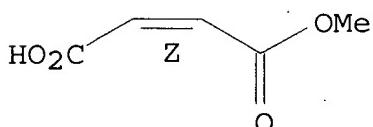
CRN 75-38-7
CMF C2 H2 F2

RN 219748-67-1 HCA
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and
 1,3,5-tri-2-propenyl-1,3,5-triazine-2,4,6(1H,3H,5H)-trione (9CI)
 (CA INDEX NAME)

CM 1

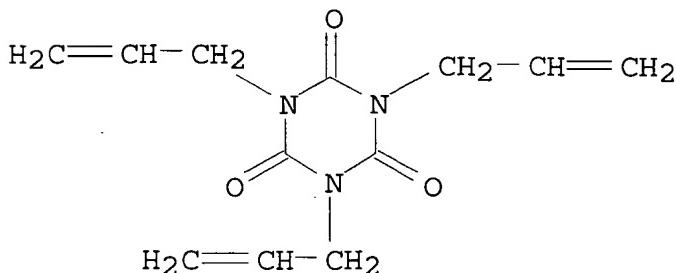
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



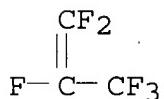
CM 2

CRN 1025-15-6
CMF C12 H15 N3 O3



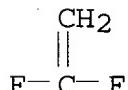
CM 3

CRN 116-15-4
CMF C3 F6



CM 4

CRN 75-38-7
CMF C2 H2 F2



IC ICM C08F214-22
ICS C08L027-16; H01B001-12; H01M010-40
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52
ST vinylidene fluoride copolymer **gel** solid
electrolyte battery
IT **Battery** anodes
 Battery cathodes
 Battery electrodes
 (vinylidene fluoride copolymer for **gel-form** solid
 electrolyte in battery)
IT Fluoropolymers, uses
 (vinylidene fluoride copolymer for **gel-form** solid
 electrolyte in battery)

- IT 219748-63-7P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene copolymer 219748-64-8P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene copolymer
 219748-65-9P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-hexamethylenediamine copolymer
 219748-66-0P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene-hexamethylenediamine copolymer
 219748-67-1P, Monomethyl maleate-vinylidene fluoride-hexafluoropropene-triallyl isocyanurate copolymer
 219748-68-2P, Allyl glycidyl ether-vinylidene fluoride-chlorotrifluoroethylene-triallyl isocyanurate copolymer
 (vinylidene fluoride copolymer for **gel-form solid electrolyte in battery**)
 IT 12190-79-3, Lithium cobalt oxide (LiCoO₂) 21324-40-3, Lithium phosphorus fluoride (LiPF₆)
 (vinylidene fluoride copolymer for **gel-form solid electrolyte in battery**)

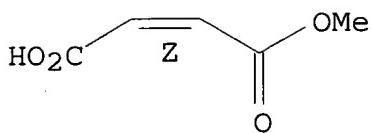
L45 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS
 130:25919 Dissolution of poly(vinylidene fluoride) resins in organic solvents for use as nonaqueous **battery** binders. Katsurao, Takumi; Horie, Katsuo; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10298298 A2 19981110 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-118613 19970423.

- AB In the process, powd. poly(vinylidene fluoride) (PVF) is dispersed first in a poor solvent and then stirred in a good solvent. After the PVF is dissolved, powd. materials for **battery** electrodes are dispersed in the soln. Thus, 10 g PVF ([.eta.] 2.1 dL/g) was dispersed in 20 g Me₂CO, mixed with 80 g N-methyl-2-pyrrolidone (NMP) at once and heated to 50.degree. to give a high-concn. soln., to which LiCoO₂ 300, carbon black 23, and NMP 23 g were added and dispersed to give a slurry for making electrode.
 IT 161109-32-6, Monomethyl maleate-vinylidene fluoride copolymer
 (dissoln. of poly(vinylidene fluoride) resins in org. solvents for use as nonaq. **battery** binders)
 RN 161109-32-6 HCA
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

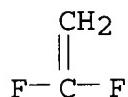
CM 1

CRN 3052-50-4
 CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

- IC ICM C08J003-09
 ICS B01F001-00; C08F214-22; C08K003-04; C08L027-16; H01M004-02;
 H01M004-62
- CC 38-2 (Plastics Fabrication and Uses)
 Section cross-reference(s): 52
- ST polyvinylidene fluoride **battery** binder dissolving method;
 acetone poor solvent PVF binder dissoln
- IT Binders
 Dissolution
 (dissoln. of poly(vinylidene fluoride) resins in org. solvents
 for use as nonaq. **battery** binders)
- IT Fluoropolymers, uses
 (dissoln. of poly(vinylidene fluoride) resins in org. solvents
 for use as nonaq. **battery** binders)
- IT **Battery** electrodes
 (nonaq., binders; dissoln. of poly(vinylidene fluoride) resins in
 org. solvents for use as nonaq. **battery** binders)
- IT 7440-44-0, Carbon, processes
 (anode active mass; dissoln. of poly(vinylidene fluoride) resins
 in org. solvents for use as nonaq. **battery** binders)
- IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 (cathode active mass; dissoln. of poly(vinylidene fluoride)
 resins in org. solvents for use as nonaq. **battery**
 binders)
- IT 67-64-1, Acetone, uses 109-99-9, THF, uses 872-50-4,
 N-Methyl-2-Pyrrolidone, uses
 (dissoln. of poly(vinylidene fluoride) resins in org. solvents
 for use as nonaq. **battery** binders)
- IT 24937-79-9, Poly(vinylidene fluoride) 161109-32-6,
 Monomethyl maleate-vinylidene fluoride copolymer
 (dissoln. of poly(vinylidene fluoride) resins in org. solvents
 for use as nonaq. **battery** binders)

129:233147 Secondary lithium **batteries** with mixed polymer binders for electrodes. Akabane, Naoto; Kitagawa, Satoshi; Uenae, Keiichiro (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10255760 A2 19980925 Heisei, 7 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1997-81987 19970314.

AB The **batteries** use cathodes and/or anodes having an active mass-binder mixt. applied on a conductive substrate, where the binder contains modified copolymers of fluoromonomers contg. vinylidene fluoride and monoesters of unsatd. dicarboxylic acids and a vinylidene fluoride based polymer.

IT 161109-32-6

(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

RN 161109-32-6 HCA

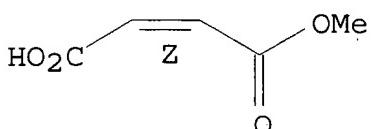
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 3052-50-4

CMF C5 H6 O4

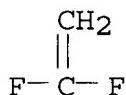
Double bond geometry as shown.



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M004-02

ICS H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrode fluoropolymer binder

IT **Battery** electrodes

(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

IT Fluoropolymers, uses

(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium **batteries**)

IT Secondary batteries

(lithium; compns. of fluoropolymer binder mixts. for electrodes in secondary lithium batteries)

IT 7782-42-5, Graphite, uses 24937-79-9, Polyvinylidene fluoride
39300-70-4, Lithium nickel oxide 161109-32-6
(compns. of fluoropolymer binder mixts. for electrodes in secondary lithium batteries)

L45 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS

127:265531 Binders for battery and cell electrodes and manufacture of binders and electrodes. Ohashi, Kazuyoshi; Miyaki, Yoshiyuki; Goto, Kuniyuki (Elf Atochem S.A., Fr.; Ohashi, Kazuyoshi; Miyaki, Yoshiyuki; Goto, Kuniyuki). PCT Int. Appl. WO 9732347 A1 19970904, 14 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.
APPLICATION: WO 1997-EP998 19970227. PRIORITY: JP 1996-39672 19960227.

AB The electrodes comprise a layer of an electrode-forming substance comprising an electrode activator and a binder coated or bonded to a surface of a metallic collect, the binder being a fluoroplastic grafted with .gtoreq.1 acrylic polymer consisting mainly of .gtoreq.1 monomer unit selected from esters of acrylic acid and/or methacrylic acid. The content of the acrylic polymer in the binder is .apprx.0.1-20 wt.%.

IT 196094-08-3P 196094-09-4P

(binders for battery and cell electrodes)

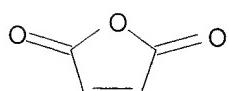
RN 196094-08-3 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 108-31-6

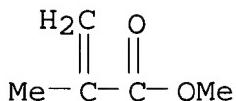
CMF C4 H2 O3



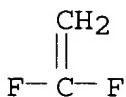
CM 2

CRN 80-62-6

CMF C5 H8 O2

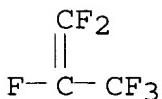


CM 3

CRN 75-38-7
CMF C2 H2 F2

RN 196094-09-4 HCA
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 1,1-difluoroethene, 2,5-furandione and 1,1,2,3,3,3-hexafluoro-1-,
 propene (9CI) (CA INDEX NAME)

CM 1

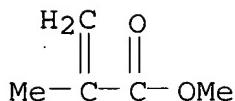
CRN 116-15-4
CMF C3 F6

CM 2

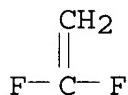
CRN 108-31-6
CMF C4 H2 O3

CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-62
ICS C09D127-16
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37
- ST **battery** electrode binder grafted fluoroplastic; electrode binder acrylic polymer grafted fluoroplastic
- IT **Battery** electrodes
(binders for and manuf. of)
- IT Fluoropolymers, uses
(binders for **battery** and cell electrodes)
- IT Fluoropolymers, uses
(graft; binders for **battery** and cell electrodes)
- IT 196094-08-3P 196094-09-4P
(binders for **battery** and cell electrodes)
- IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
(binders for **battery** cathodes of)
- IT 94-36-0, Benzoylperoxide, uses 105-64-6,
Diisopropylperoxydicarbonate 614-45-9, tert-Butylperoxybenzoate
(in prepn. of binders for **battery** and cell electrodes)

L45 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS

126:158262 Epoxy group-containing vinylidene fluoride copolymer and its application to secondary **battery**. Kashio, Hidetora; Horie, Katsuo; Suzuki, Fujio (Kureha Kagaku Kogyo Kabushiki Kaisha, Japan). Eur. Pat. Appl. EP 751157 A1 19970102, 13 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW.
APPLICATION: EP 1996-303282 19960510. PRIORITY: JP 1995-184961 19950629.

AB A vinylidene fluoride copolymer having a relatively high mol. wt. is formed by copolymerg. (a) vinylidene fluoride as a principal component, (b) a small amt. of epoxy-group-contg. monomer, and (c) an optional component, such as an unsatd. dibasic acid monoester functioning as a curing agent for the epoxy group. When cured with an optional epoxy curing agent, the vinylidene fluoride copolymer

provides a cured product having good adhesion with a metal, and also showing excellent solvent resistance and chem. resistance. The vinylidene fluoride copolymer is particularly suitable for a binder for producing an electrode for non-aq. solvent-type secondary battery.

IT 161109-32-6P

(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

RN 161109-32-6 HCA

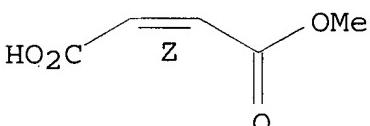
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 3052-50-4

CMF C5 H6 O4

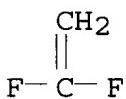
Double bond geometry as shown.



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM C08F214-22

ICS H01M004-62

CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 52

ST vinylidene fluoride copolymer epoxy contg manuf; secondary **battery** electrode vinylidene fluoride copolymer; metal adhesion vinylidene fluoride copolymer

IT Secondary **batteries**

(epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

IT Fluoropolymers, preparation

Fluoropolymers, preparation

(epoxy; epoxy group-contg. vinylidene fluoride copolymers and use in secondary **batteries**)

IT Epoxy resins, preparation

Epoxy resins, preparation

- (fluorine-contg.; epoxy group-contg. vinylidene fluoride copolymers and use in secondary batteries)
- IT 186773-66-0P 186773-69-3P 186773-70-6P
 (cured fluoropolymer; epoxy group-contg. vinylidene fluoride copolymers and use in secondary batteries)
- IT 161109-32-6P
 (epoxy group-contg. vinylidene fluoride copolymers and use in secondary batteries)
- IT 186773-65-9P, Allyl glycidyl ether-vinylidene fluoride copolymer
 186773-67-1P 186773-68-2P
 (epoxy group-contg. vinylidene fluoride copolymers and use in secondary batteries)
- IT 7440-50-8, Copper, properties
 (foil, fluoropolymer adhesion to; epoxy group-contg. vinylidene fluoride copolymers and use in secondary batteries)

L45 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS

122:214845 Vinylidene fluoride copolymer and binder composition containing the copolymer for non-aqueous solvent type secondary battery.. Takahashi, Yosuke; Suzuki, Fujio; Iwasaki, Takao (Kureha Kagaku Kogyo K. K., Japan). Eur. Pat. Appl. EP 601754 A1 19940615, 12 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1993-309488 19931129. PRIORITY: JP 1992-345141 19921202.

AB A vinylidene fluoride copolymer contg. a carboxyl group or a carbonate group is formed by copolymerg. .gtoreq.80% vinylidene fluoride (I) with a relatively small amt. of an unsatd. dibasic acid monoester, e.g. maleic acid monomethyl ester (II), or vinylene carbonate. The copolymer has a large adhesion to various substrates or fillers and is excellent in chem. resistance, so that it is useful as a basic substance constituting a binder as in the title use, an adhesive, a paint, etc. Aq. suspension polymn. of I with II (100:1.01) gave polymer having CO group content 1.2 .times. 10⁻⁴ mol/g, and this polymer/N-methyl-2-pyrrolidone (10:90) was compounded with coke powder to give an electrode-forming compn. for lamination with Cu foil.

IT 161109-32-6P
 (binder compn. contg. the copolymer for non-aq. solvent type secondary battery)

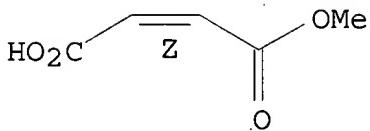
RN 161109-32-6 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

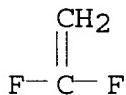
CM 1

CRN 3052-50-4
 CMF C5 H6 O4

Double bond geometry as shown.



CM 2

CRN 75-38-7
CMF C2 H2 F2

- IC ICM C08F214-22
 ICS C08L027-16; H01M006-00
 CC 35-4 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 38, 72
 ST vinylidene fluoride copolymer binder electrode; vinylene carbonate copolymer binder electrode; methyl maleate vinylidene fluoride copolymer; secondary **battery** vinylidene fluoride copolymer binder
 IT Binding materials
 (compr. compn. contg. vinylidene fluoride copolymer for non-aq. solvent type secondary **battery**)
 IT Electrodes
 (**battery**, binder compn. contg. vinylidene fluoride copolymer for non-aq. solvent type)
 IT 161109-32-6P 161747-35-9P 162231-09-6P
 (binder compn. contg. the copolymer for non-aq. solvent type secondary **battery**)
 IT 7440-44-0, Carbon, uses
 (powder; binder compn. contg. vinylidene fluoride copolymer for non-aq. solvent type secondary **battery**)

=> d 146 1-10 cbib abs hitstr hitind

- L46 ANSWER 1 OF 10 HCA COPYRIGHT 2003 ACS
 136:250248 Electrode active mass agents containing vinylidene fluoride-containing polymer binders, electrode structure, and nonaqueous electrochemical devices. Katsurao, Takumi; Sakuma, Mitsuyasu; Sato, Hiroshi; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002075374 A2 20020315, 8 pp. (Japanese) CODEN: JKXXAF. APPLICATION: JP 2000-262318 20000831.
- AB The electrode active mass agents contain powdery electrode main components, powder elec. conductive materials, vinylidene

fluoride-contg. polymers, and solvents, and are prep'd. by mixing each components, wherein the elec. conductive materials and optionally the electrode main components are previously impregnated with solns. contg. the polymers and having viscosity ≤ 100 cPs at 30.degree., or the solvents, and then further mixed with the other components. An electrode structure comprises an electrode active mass which is prep'd. by applying and drying the active mass agent. Also claimed are nonaq. electrochem. devices, e.g., **batteries** and double-layer capacitors, comprising the electrode structure which contain activated carbon powder as the electrode main component. The mixing process prevents gelation of the active mass agents, so that the formed active mass show high adhesion with current collectors when being used in the **batteries**.

IT 219748-63-7

(binder; electrode active mass prep'd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)

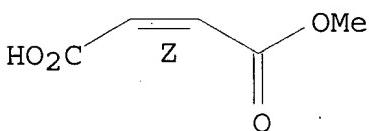
RN 219748-63-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

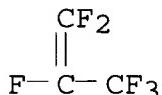
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



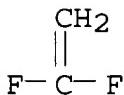
CM 2

CRN 116-15-4
CMF C3 F6



CM 3

CRN 75-38-7
CMF C2 H2 F2



- IC ICM H01M004-62
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 76
 ST **battery** electrode manuf binder vinylidene fluoride polymer mixing; elec double layer capacitor electrode manuf binder mixing; activated carbon electrode manuf binder polymer mixing
 IT **Battery** electrodes
 Mixing
Primary batteries
Secondary batteries
 (electrode active mass prep'd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)
 IT 24937-79-9, Vinylidene fluoride homopolymer **219748-63-7**
 (binder; electrode active mass prep'd. by mixing vinylidene fluoride-contg. polymer binders with powdery electrode components for nonaq. electrochem. devices)

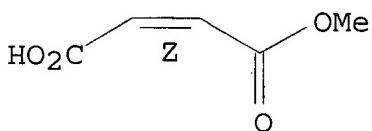
- L46 ANSWER 2 OF 10 HCA COPYRIGHT 2003 ACS
 135:183250 Fluoropolymer binders for nonaqueous **electrolyte batteries**, electrode active mass, and nonaqueous **electrolyte batteries**. Ino, Tadashi; Ichikawa, Kenji; Nishino, Takatomo; Asano, Michio (Daikin Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001223011 A2 20010817, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-33495 20000210.
 AB The binders comprise vinylidene fluoride 30-80, tetrafluoroethylene 10-50, vinyl ether-type monomer 3-30, and their copolymerizable monomer 0-10 mol% and have storage modulus (E') ≥ 3.0 times 10⁹ dyne/cm² detd. by measuring dynamic viscoelasticity at 25.degree.. Preferably, the copolymerizable monomers contain S, N, O, F, Cl, Br, and/or I. Preferable vinyl ether-type monomers are CR₁R₂:CR₃O_xHyF_z, CR₁R₂:CR₃O(CpHqFrO)_sC_xHyF_z, and/or CR₁R₂:CR₃O[CR₄R₅C(R₇R₈R₉)R₆O]_tC_xHyF_z (R₁₋₉ = H, Cl, F; x, p, s, t = integer of ≥ 1 ; y, z, q, r = integer of ≥ 0 ; y + z = 2x + 1; q + r = 2p + 1). Also claimed are electrode active materials comprising the binder and nonaq. **electrolyte batteries** comprising the active materials. The binders are chem. stable and flexible.
 IT **355015-69-9P 355015-70-2P**
 (flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte secondary batteries**)
 RN 355015-69-9 HCA
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with

1,1-difluoroethene, tetrafluoroethene and
trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

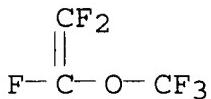
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



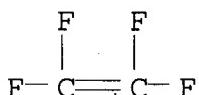
CM 2

CRN 1187-93-5
CMF C3 F6 O



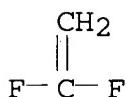
CM 3

CRN 116-14-3
CMF C2 F4



CM 4

CRN 75-38-7
CMF C2 H2 F2

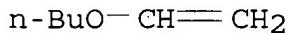


RN 355015-70-2 HCA
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
1,1-difluoroethene, (ethenyloxy)butanol, tetrafluoroethene and

trifluoro(trifluoromethoxy)ethene (9CI) (CA INDEX NAME)

CM 1

CRN 42978-84-7
 CMF C₆ H₁₂ O₂
 CCI IDS

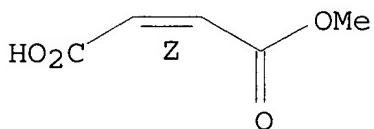


D1—OH

CM 2

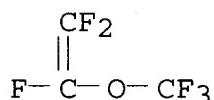
CRN 3052-50-4
 CMF C₅ H₆ O₄

Double bond geometry as shown.



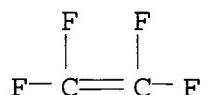
CM 3

CRN 1187-93-5
 CMF C₃ F₆ O

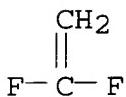


CM 4

CRN 116-14-3
 CMF C₂ F₄



CM 5

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-62
ICS H01M010-40
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- ST flexible fluoropolymer binder **battery** active material
- IT **Battery** electrodes
Binders
Secondary batteries
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)
- IT Fluoropolymers, uses
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)
- IT 56357-87-0P, Tetrafluoroethylene-trifluoromethyl trifluorovinyl ether-vinylidene fluoride copolymer 74499-68-6P 355015-68-8P
355015-69-9P 355015-70-2P
(flexible and chem. stable fluoropolymer binders in electrode active materials for nonaq. **electrolyte** secondary **batteries**)

L46 ANSWER 3 OF 10 HCA COPYRIGHT 2003 ACS
 133:153179 Polymer compositions for **electrolytes**, the **electrolytes**, and **batteries**. Kuzurao, Isao; Horie, Katsuo; Ichikawa, Yukio; Nagai, Aisaku (Kureha Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000215917 A2 20000804, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-48721 19990120.

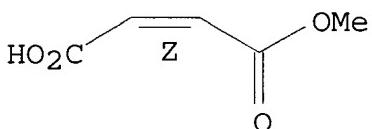
- AB The polymers are reaction products of a copolymer, contg. .gtoreq.50% vinylidene fluoride and carboxyl and/or epoxy groups, and a vinyl compd., having .gtoreq.1 carboxyl and/or epoxy reactive groups. Polymer **electrolytes** have the polymer impregnated with a nonaq. **electrolyte** soln. Secondary Li **batteries** have the **electrolyte** between Li intercalating cathodes and anodes.
- IT 286961-85-1 286961-86-2
(compns. of polymer substrates for solid **electrolytes** in secondary lithium **batteries**)
- RN 286961-85-1 HCA
- CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with

1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, oxiranylmethyl 2-methyl-2-propenoate and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

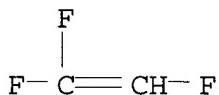
CRN 3052-50-4
CMF C5 H6 O4

Double bond geometry as shown.



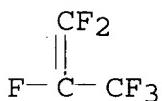
CM 2

CRN 359-11-5
CMF C2 H F3



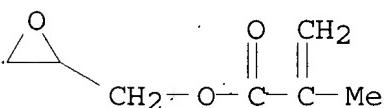
CM 3

CRN 116-15-4
CMF C3 F6



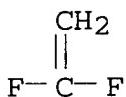
CM 4

CRN 106-91-2
CMF C7 H10 O3



CM 5

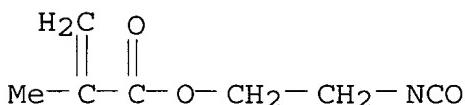
CRN 75-38-7
 CMF C2 H2 F2



RN 286961-86-2 HCA
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene,
 2-isocyanatoethyl 2-methyl-2-propenoate and trifluoroethene (9CI)
 (CA INDEX NAME)

CM 1

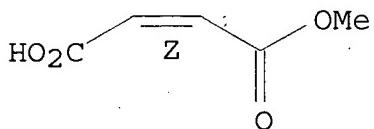
CRN 30674-80-7
 CMF C7 H9 N O3



CM 2

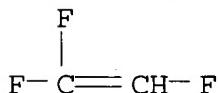
CRN 3052-50-4
 CMF C5 H6 O4

Double bond geometry as shown.

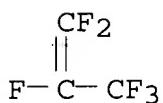


CM 3

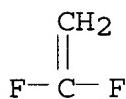
CRN 359-11-5
 CMF C2 H F3



CM 4

CRN 116-15-4
CMF C3 F6

CM 5

CRN 75-38-7
CMF C2 H2 F2

IT 286961-81-7P

(prepolymers for polymer substrates for solid
electrolytes in secondary lithium batteries)

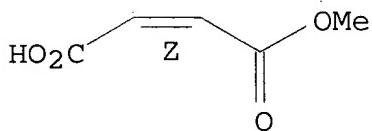
RN 286961-81-7 HCA

CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with
1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and
trifluoroethene (9CI) (CA INDEX NAME)

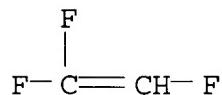
CM 1

CRN 3052-50-4
CMF C5 H6 O4

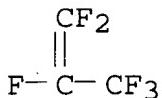
Double bond geometry as shown.



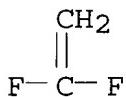
CM 2

CRN 359-11-5
CMF C2 H F3

CM 3

CRN 116-15-4
CMF C3 F6

CM 4

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M010-40
 ICS H01B001-06; H01G009-025; C08F214-22
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 ST secondary lithium **battery electrolyte** polymer
 substrate; vinylidene fluoride copolymer compn **battery**
electrolyte
 IT **Battery electrolytes**
 (compns. of polymer substrates for **electrolytes** for
 secondary lithium **batteries**)
 IT 286961-85-1 286961-86-2
 (compns. of polymer substrates for solid **electrolytes**
 in secondary lithium **batteries**)
 IT 40528-67-4P, Hexafluoropropylene-trifluoroethylene-vinylidene
 fluoride copolymer 186773-67-1P 286961-81-7P
 286961-87-3P
 (prepolymers for polymer substrates for solid
electrolytes in secondary lithium **batteries**)

L46 ANSWER 4 OF 10 HCA COPYRIGHT 2003 ACS
 130:268411 Thermoplastic elastomer-based gel-type polyelectrolyte.
 Tonomura, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan).
 Jpn. Kokai Tokkyo Koho JP 11080296 A2 19990326 Heisei, 7 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-246369 19970911.
 AB Title gel-type polyelectrolyte with lithium ion cond. >1 ms/cm at
 room temp., good thermal, chem. and electrochem. stability,
 processibility, adhesion with powder particles of electrode
 materials and viscoelasticity comprises (A) thermoplastic elastomer
 of vinylidene fluoride-acrylonitrile block or graft copolymer, (B)

aprotonic org. solvent dissolved with lithium salt, optionally (C) elec. insulating inorg. substance powder. Thus, a gel-type polyelectrolyte sheet with thickness of 80 .mu.m was prep'd. by dispersing of acrylonitrile-vinyl acetate-methacrylic acid-vinylidene fluoride block copolymer powder 2.5 g into LiPF₆-dissolved solvent mixt. of ethylene carbonate (EC)-Et Me carbonate (EMC) (LiPF₆: 1.5 mol/l, EC:EMC = 1:3) 23 g, heating at 149.degree. to give a transparent viscous mixt., followed by cooling the mixt. to 20.degree. to obtain a gel-type polyelectrolyte lump, then rolling the lump at 80.degree., showing elec. conductivities of 0.3 (-20.degree.), 3.5 (20.degree.), and 8 (80.degree.) ms/cm.

IT 222028-23-1P, Acrylonitrile-hexafluoropropylene-methacrylic acid-styrene-vinylidene fluoride block copolymer
(elastomer; prepn. of fluorovinylidene-acrylonitrile elastomer-based gel-type polyelectrolyte)

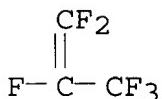
RN 222028-23-1 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene and 2-propenenitrile, block (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

CMF C3 F6



CM 2

CRN 107-13-1

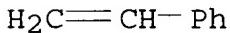
CMF C3 H3 N



CM 3

CRN 100-42-5

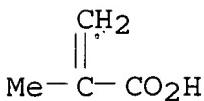
CMF C8 H8



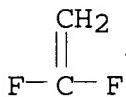
CM 4

CRN 79-41-4

CMF C4 H6 O2



CM 5

CRN 75-38-7
CMF C2 H2 F2

IC ICM C08F293-00
 ICS C08F290-00; C08K003-00; C08K003-18; C08L051-00; C08L053-00;
 H01M006-18; H01M006-22; H01M010-40

CC 39-9 (Synthetic Elastomers and Natural Rubber)
 Section cross-reference(s): 35, 76

IT Electric conductivity
 Electric conductors
Electrolytes

Gels

(prepn. and properties of fluorovinylidene-acrylonitrile
 elastomer-based gel-type polyelectrolyte)

IT 222028-16-2P, Acrylonitrile-methacrylic acid-vinyl
 acetate-vinylidene fluoride block copolymer 222028-18-4P,
 Acrylonitrile-hexafluoropropylene-styrene-vinyl acetate-vinylidene
 chloride block copolymer 222028-20-8P, Acrylonitrile-methacrylic
 acid-vinylidene fluoride block copolymer **222028-23-1P**,
 Acrylonitrile-hexafluoropropylene-methacrylic acid-styrene-
 vinylidene fluoride block copolymer
 (elastomer; prepn. of fluorovinylidene-acrylonitrile
 elastomer-based gel-type polyelectrolyte)

L46 ANSWER 5 OF 10 HCA COPYRIGHT 2003 ACS

130:141631 Extrusion of polymer-based **electrochemical**
cell components. Kronfli, Esam; Mattingley, Neville John
 (Aea Technology Plc, UK). PCT Int. Appl. WO 9905744 A1 19990204, 21
 pp. DESIGNATED STATES: W: CA, GB, JP, KP, KR, US; RW: AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE.
 (English). CODEN: PIXXD2. APPLICATION: WO 1998-GB2167 19980720.
 PRIORITY: GB 1997-15392 19970723.

AB A cell component comprising a polymer is prep'd. by mixing a polymer
 consisting primarily of vinylidene fluoride with .gt;req.1 other
 ingredient, such as an org. plasticizer, and extruding the mixt. at
 a temp. above the m.p. of the polymer. The method can be used to
 make **electrolyte** layers in which case the polymer is mixed

with at least a salt, and to make layers of composite material for use as anodes or cathodes, in which case the polymer is mixed with at least a particulate insertion material. No volatile solvents are required.

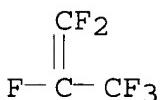
IT 162817-95-0D, lithium complexes
 (extrusion of **battery electrolytes** from mixt.
 of ethylene carbonate and propylene carbonate and)

RN 162817-95-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene and
 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

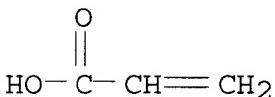
CM 1

CRN 116-15-4
 CMF C3 F6



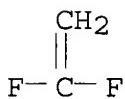
CM 2

CRN 79-10-7
 CMF C3 H4 O2



CM 3

CRN 75-38-7
 CMF C2 H2 F2



IC ICM H01M010-40
 ICS H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 38, 76

ST polymer **battery** component extrusion; vinylidene fluoride
 polymer **battery** component extrusion

IT **Battery** anodes
Battery cathodes

Battery electrolytes

(extrusion of polymer-based)

IT **Electrochemical cells****Secondary batteries**

(extrusion of polymer-based components for)

IT **Fluoropolymers, processes**(extrusion of polymer-based **electrochem. cell**
components)IT **Fluoropolymers, processes**(lithium complexes; extrusion of **battery** components
from polymer-based mixt. contg.)IT **Ionic conductivity**(of polymer-based mixts. for **battery**
electrolytes)

IT 9011-17-0, Solef 21010

(extrusion of **battery** anodes from graphite and)

IT 24937-79-9D, PVDF, lithium complexes

(extrusion of **battery** components from polymer-based
mixt. contg.)IT 7439-93-2D, Lithium, PVDF complexes, processes 162817-95-0D
, lithium complexes(extrusion of **battery electrolytes** from mixt.

of ethylene carbonate and propylene carbonate and)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(extrusion of **battery electrolytes** from
polymer-based mixt. contg.)

L46 ANSWER 6 OF 10 HCA COPYRIGHT 2003 ACS

130:40968 Polymeric binders for nonaqueous **battery** electrodes.

Noritake, Masayoshi; Ito, Nobuyuki (JSR Co., Ltd., Japan). Jpn.

Kokai Tokkyo Koho JP 10302799 A2 19981113 Heisei, 7 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1997-121444 19970425.

AB The binders are aq. dispersions contg. vinylidene fluoride polymers
having functional groups. Use of the binders give **batteries**
with high performance and storage stability.

IT 216673-45-9P 216673-56-2P 216673-66-4P

(vinylidene fluoride polymers as binders for nonaq.
battery electrodes)

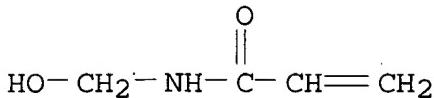
RN 216673-45-9 HCA

CN Butanedioic acid, methylene-, polymer with butyl 2-propenoate,
1,1-difluoroethene, 1,1,2,3,3-hexafluoro-1-propene,
N-(hydroxymethyl)-2-propenamide, methyl 2-methyl-2-propenoate and
2-propenoic acid, graft (9CI) (CA INDEX NAME)

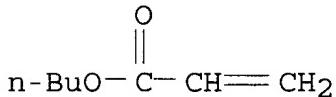
CM 1

CRN 924-42-5

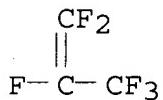
CMF C4 H7 N O2



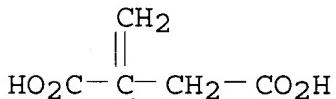
CM 2

CRN 141-32-2
CMF C7 H12 O2

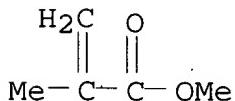
CM 3

CRN 116-15-4
CMF C3 F6

CM 4

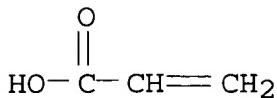
CRN 97-65-4
CMF C5 H6 O4

CM 5

CRN 80-62-6
CMF C5 H8 O2

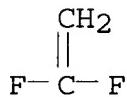
CM 6

CRN 79-10-7
 CMF C3 H4 O2



CM 7

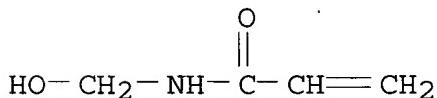
CRN 75-38-7
 CMF C2 H2 F2



RN 216673-56-2 HCA
 CN 2-Propenoic acid, polymer with butyl 2-propenoate,
 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene
 and N-(hydroxymethyl)-2-propenamide, graft (9CI) (CA INDEX NAME)

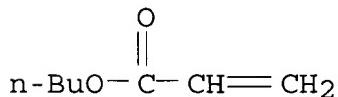
CM 1

CRN 924-42-5
 CMF C4 H7 N O2



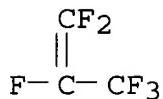
CM 2

CRN 141-32-2
 CMF C7 H12 O2

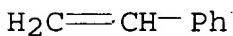


CM 3

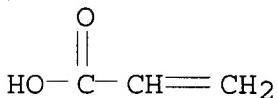
CRN 116-15-4
 CMF C3 F6



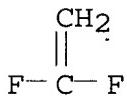
CM 4

CRN 100-42-5
CMF C8 H8

CM 5

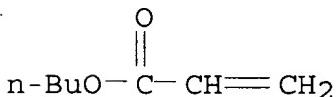
CRN 79-10-7
CMF C3 H4 O2

CM 6

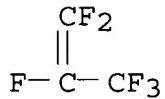
CRN 75-38-7
CMF C2 H2 F2

RN 216673-66-4 HCA
 CN Butanedioic acid, methylene-, polymer with butyl 2-propenoate,
 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, methyl
 2-methyl-2-propenoate, oxiranylmethyl 2-methyl-2-propenoate and
 2-propenoic acid, graft (9CI) (CA INDEX NAME)

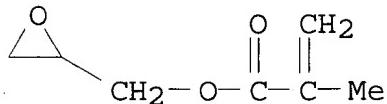
CM 1

CRN 141-32-2
CMF C7 H12 O2

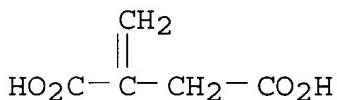
CM 2

CRN 116-15-4
CMF C3 F6

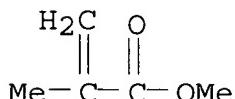
CM 3

CRN 106-91-2
CMF C7 H10 O3

CM 4

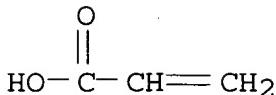
CRN 97-65-4
CMF C5 H6 O4

CM 5

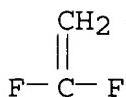
CRN 80-62-6
CMF C5 H8 O2

CM 6

CRN 79-10-7
CMF C3 H4 O2



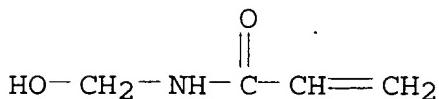
CM 7

CRN 75-38-7
CMF C2 H2 F2

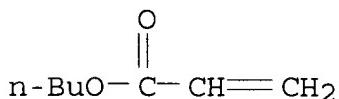
IC ICM H01M004-62
ICS C08L027-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 35
 ST vinylidene fluoride polymer binder **battery** electrode;
 nonaq **battery** electrode binder vinylidene polymer
 IT **Battery** electrodes
 Binders
 (vinylidene fluoride polymers as binders for nonaq.
battery electrodes)
 IT 216673-45-9P 216673-56-2P 216673-66-4P
 (vinylidene fluoride polymers as binders for nonaq.
battery electrodes)

L46 ANSWER 7 OF 10 HCA COPYRIGHT 2003 ACS
 129:262851 Binder for hydrogen-absorbing alloy anodes for secondary **batteries**. Ito, Nobuyuki; Yasuda, Naoshi; Noritake, Yasuyoshi; Takeuchi, Tasumasa (JSR Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10241692 A2 19980911 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-58502 19970226.
 AB The binder is an aq. dispersion of a copolymer which has a functional group, glass transition point .ltoreq.5.degree., and toluene-insol. component 20-100 wt.%. The binder shows high adhesion with current collectors and does not affect discharge capacity after charge-discharge cycling and is free from ignition.
 IT 213676-17-6P
 (binder; binder for H-absorbing alloy anodes for secondary **batteries**)
 RN 213676-17-6 HCA
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenylbenzene, 1,1,2,3,3,3-hexafluoro-1-propene, N-(hydroxymethyl)-2-propenamide and 2-propenoic acid (9CI) (CA INDEX NAME)

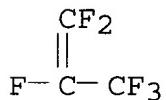
CM 1

CRN 924-42-5
CMF C4 H7 N O2

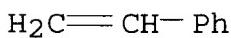
CM 2

CRN 141-32-2
CMF C7 H12 O2

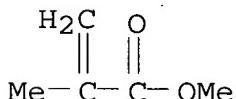
CM 3

CRN 116-15-4
CMF C3 F6

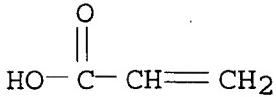
CM 4

CRN 100-42-5
CMF C8 H8

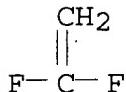
CM 5

CRN 80-62-6
CMF C5 H8 O2

CM 6

CRN 79-10-7
CMF C3 H4 O2

CM 7

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-62
ICS H01M004-24
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
- ST battery hydrogen absorbing alloy anode binder;
fluoropolymer acrylic binder battery anode; polysiloxane acrylic binder battery anode
- IT Battery anodes
(H-absorbing alloy; binder for H-absorbing alloy anodes for secondary batteries)
- IT Fluoropolymers, uses
(acrylic, binder; binder for H-absorbing alloy anodes for secondary batteries)
- IT Polysiloxanes, uses
(acrylic, graft, binder; binder for H-absorbing alloy anodes for secondary batteries)
- IT Binders
(binder for H-absorbing alloy anodes for secondary batteries)
- IT 1333-74-0, Hydrogen, uses
(alloys contg. absorbed, anodes; binder for H-absorbing alloy anodes for secondary batteries)
- IT 213676-19-8P 213676-21-2P
(binder; binder for H-absorbing alloy anodes for secondary batteries)
- IT 213676-15-4P 213676-17-6P
(binder; binder for H-absorbing alloy anodes for secondary batteries)

L46 ANSWER 8 OF 10 HCA COPYRIGHT 2003 ACS

129:191508 Secondary lithium **batteries** with cathodes using fluoropolymer binders. Akabane, Naoto; Kitagawa, Akira (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10233216 A2 19980902 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-51060 19970218.

AB The **batteries** use cathodes having an active mass-binder mixt. applied on a conductive substrate, where the binder contains polytetrafluoroethylene and a vinylidene fluoride based copolymer contg. fluoro monomers and unsatd. dihydric acid monoester monomers.

IT 200424-67-5
(fluoropolymer binder mixts. for cathodes in secondary lithium **batteries**)

RN 200424-67-5 HCA

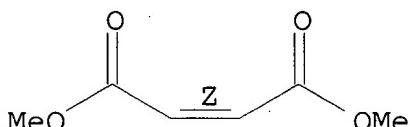
CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 624-48-6

CMF C6 H8 O4

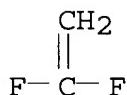
Double bond geometry as shown.



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M004-62

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** cathode fluoropolymer binder mixt; polytetrafluoroethylene binder mixt lithium **battery** cathode; vinylidene fluoride copolymer lithium **battery** cathode; unsatd ester copolymer **battery** cathode

IT **Battery** cathodes
Binders

(fluoropolymer binder mixts. for cathodes in secondary lithium

batteries)

- IT Fluoropolymers, uses
 (fluoropolymer binder mixts. for cathodes in secondary lithium
batteries)
- IT 9002-84-0, Polytetrafluoroethylene 39300-70-4, Lithium nickel
 oxide 200424-67-5
 (fluoropolymer binder mixts. for cathodes in secondary lithium
batteries)

L46 ANSWER 9 OF 10 HCA COPYRIGHT 2003 ACS

129:43339 Binders for secondary nonaqueous **electrolyte**
batteries and **battery** electrode active mass
 mixtures using the binders. Shimizu, Tetsuo; Higashihata,
 Yoshihide; Nakamura, Takayuki; Ino, Tadashi; Ichikawa, Kenji (Daikin
 Industries, Ltd., Japan; Shimizu, Tetsuo; Higashihata, Yoshihide;
 Nakamura, Takayuki; Ino, Tadashi; Ichikawa, Kenji). PCT Int. Appl.
 WO 9827605 A1 19980625, 32 pp. DESIGNATED STATES: W: AU, CN, ID,
 KR, RU, SG, US; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT,
 LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO
 1997-JP3576 19971006. PRIORITY: JP 1996-335872 19961216.

AB The binders are copolymers contg. 50-80 mol% vinylidene fluoride and
 20-50 mol% C₂F₄, or vinylidene fluoride 50-80, C₂F₄ 17-50, and other
 copolymerizable monomer <3 mol%. The binders do not swell in
battery electrolyte, and render **batteries**
 long cycle life. The cathodes are preferably Li contg oxides.

IT 208391-84-8
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 electrodes in secondary lithium **batteries**)

RN 208391-84-8 HCA

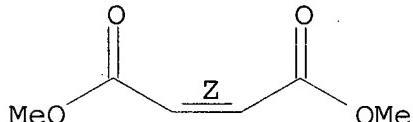
CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with
 1,1-difluoroethene and tetrafluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 624-48-6

CMF C₆ H₈ O₄

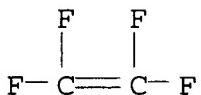
Double bond geometry as shown.



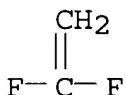
CM 2

CRN 116-14-3

CMF C₂ F₄



CM 3

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-62
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 ST **battery** electrode binder vinylidene fluoride copolymer;
 electrode binder vinylidene fluoride tetrafluoroethylene copolymer;
 lithium **battery** electrode nonswelling binder
 IT Secondary **batteries**
 (lithium; nonswelling vinylidene-tetrafluoroethylene copolymer
 binders for electrodes in secondary lithium **batteries**)
 IT Carbon black, uses
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 carbonaceous anodes in secondary lithium **batteries**)
 IT Binders
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 electrodes in secondary lithium **batteries**)
 IT Fluoropolymers, uses
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 electrodes in secondary lithium **batteries**)
 IT 25190-89-0 25684-76-8, Tetrafluoroethylene-vinylidene fluoride
 copolymer 74499-68-6 **208391-84-8**
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 electrodes in secondary lithium **batteries**)
 IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 (nonswelling vinylidene-tetrafluoroethylene copolymer binders for
 lithium cobaltate cathodes in secondary lithium **batteries**
)

L46 ANSWER 10 OF 10 HCA COPYRIGHT 2003 ACS
 128:63958 Electrode binders, electrode active mixtures, and electrode
 structures for nonaqueous **electrolyte batteries**
 and the **batteries**. Kajio, Hidetora; Horie, Katsuo; Nagai,
 Aisaku; Katsao, Takumi (Kureha Chemical Industry Co., Ltd., Japan).
 Jpn. Kokai Tokkyo Koho JP 09320607 A2 19971212 Heisei, 8 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-152944 19960527.

AB The binders contain 5-75% vinylidene fluoride based polymer having intrinsic viscosity ≥ 1.2 dL/g and remaining carboxy or epoxy group contg. vinylidene fluoride polymer. The electrode active mixts. contain powd. electrode active mass dispersed in the binder. The electrodes have the electrode active mixt. applied at least on 1 side of a current collecting substrate. The **batteries** use cathodes and/or anodes having the above structure.

IT 200424-67-5P

(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)

RN 200424-67-5 HCA

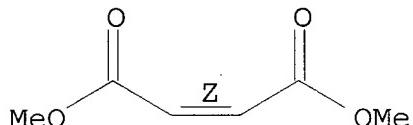
CN 2-Butenedioic acid (2Z)-, dimethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 624-48-6

CMF C6 H8 O4

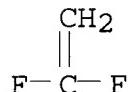
Double bond geometry as shown.



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M004-62
ICS C08L027-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** electrode binder vinylidene fluoride polymer

IT **Battery** anodes

(vinylidene fluoride based polymer binder mixts. for carbonaceous anodes in nonaq. **electrolyte batteries**)

IT Carbonaceous materials (technological products)

(vinylidene fluoride based polymer binder mixts. for carbonaceous anodes in nonaq. **electrolyte batteries**)

IT Binders

(vinylidene fluoride based polymer binder mixts. for nonaq. **electrolyte battery** electrodes)

- IT Fluoropolymers, uses
 (vinylidene fluoride based polymer binder mixts. for nonaq.
battery electrolyte electrodes)
- IT 24937-79-9P, Poly(vinylidene fluoride) 186773-65-9P, Allyl
 glycidyl ether-vinylidene fluoride copolymer 200424-67-5P
 (vinylidene fluoride based polymer binder mixts. for nonaq.
battery electrolyte electrodes)

=> d 147 1-14 cbib abs hitstr hitind

L47 ANSWER 1 OF 14 HCA COPYRIGHT 2003 ACS

137:281916 Secondary lithium ion polymer **battery** and
 manufacture of binder used as tightly bonding layer in the
battery. Tokai, Yusuke; Mizuguchi, Akio; Higami, Akihiro;
 Chang, Sho Wu; Kobayashi, Tadashi; Takeuchi, Sawako (Mitsubishi
 Materials Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002304997 A2
 20021018, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 2001-303053 20010928. PRIORITY: JP 2001-25688 20010201.

AB In the **battery** comprising an **electrolyte**
 sandwiched between a cathode and an anode, the cathode comprises a
 cathode collector laminated with a cathode active material layer
 contg. a binder A via a tightly bonding layer contg. a binder C and
 elec. conductors, and the anode comprises an anode collector
 laminated with an anode active material layer contg. a binder B via
 a tightly bonding layer contg. a binder C and elec. conductors, in
 which the binder C is a polymer obtained by modification of binder A
 or binder B. The binder C is manufd. by modification of binder A or
 binder B. The **battery** shows high interlayer adhesion
 between active material and collector layers to increase elec.
 cond., cycle life, and corrosion resistance.

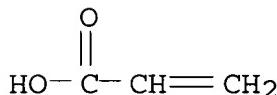
IT 109955-89-7P, Acrylic acid-vinylidene fluoride graft
 copolymer 110866-45-0P, Methyl methacrylate-vinylidene
 fluoride graft copolymer 113253-83-1P 132789-82-3P
 , Methyl acrylate-vinylidene fluoride graft copolymer
 (binder; manuf. of binder used as tightly bonding layer in
 secondary lithium ion polymer **battery**)

RN 109955-89-7 HCA

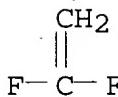
CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA
 INDEX NAME)

CM 1

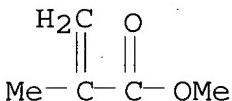
CRN 79-10-7
 CMF C3 H4 O2



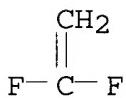
CM 2

CRN 75-38-7
CMF C2 H2 F2RN 110866-45-0 HCA
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

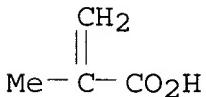
CM 1

CRN 80-62-6
CMF C5 H8 O2

CM 2

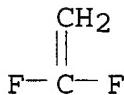
CRN 75-38-7
CMF C2 H2 F2RN 113253-83-1 HCA
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, graft
(9CI) (CA INDEX NAME)

CM 1

CRN 79-41-4
CMF C4 H6 O2

CM 2

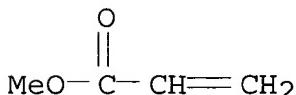
CRN 75-38-7
 CMF C2 H2 F2



RN 132789-82-3 HCA
 CN 2-Propenoic acid, methyl ester, polymer with 1,1-difluoroethene,
 graft (9CI) (CA INDEX NAME)

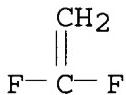
CM 1

CRN 96-33-3
 CMF C4 H6 O2



CM 2

CRN 75-38-7
 CMF C2 H2 F2



IC ICM H01M004-62
 ICS C08F259-08; C09J127-12; C09J127-16; C09J127-18; C09J127-20;
 C09J127-22; C09J151-00; C09J201-00; H01M004-02; H01M004-66;
 H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

Section cross-reference(s): 38

ST lithium ion polymer **battery** binder; radiation grafting
 polymer binder lithium ion **battery**; cycle life lithium
battery graft polymer binder

IT Fluoropolymers, uses
 (acrylic, graft, binder; manuf. of binder used as tightly bonding
 layer in secondary lithium ion polymer **battery**)

IT Polymerization
 (graft, radiochem.; manuf. of binder used as tightly bonding
 layer in secondary lithium ion polymer **battery**)

IT Secondary **batteries**
 (lithium; manuf. of binder used as tightly bonding layer in
 secondary lithium ion polymer **battery**)

IT Binders

(manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)

IT 109955-89-7P, Acrylic acid-vinylidene fluoride graft copolymer 110866-45-0P, Methyl methacrylate-vinylidene

fluoride graft copolymer 113253-83-1P 132789-82-3P

, Methyl acrylate-vinylidene fluoride graft copolymer

(binder; manuf. of binder used as tightly bonding layer in secondary lithium ion polymer **battery**)

L47 ANSWER 2 OF 14 HCA COPYRIGHT 2003 ACS

135:259678 Use of grafted PVdF-based polymers in lithium

batteries. Jarvis, C. R.; Macklin, W. J.; Macklin, A. J.; Mattingley, N. J.; Kronfli, E. (E1 Culham, Culham Science Centre, AEA Technology Batteries, Abingdon, Oxfordshire, OX14 3ED, UK).

Journal of Power Sources, 97-98, 664-666 (English) 2001. CODEN: JPSODZ. ISSN: 0378-7753. Publisher: Elsevier Science S.A..

AB Modifications to the properties of PVdF have been achieved by grafting. Selection of the appropriate monomer has led to an improvement in the adhesion of composite electrodes to current collectors, increased **electrolyte** solvent uptake and increased the range of solvents for homopolymer PVdF at room temp. Graphite - LiCoO₂ cells contg. such modified PVdF-based polymers have demonstrated good rate performance and stable cycle life.

IT 109955-89-7, Acrylic acid-vinylidene fluoride graft copolymer

(grafted polyvinylidenedifluoride-based polymers in lithium **batteries**)

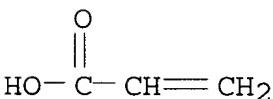
RN 109955-89-7 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

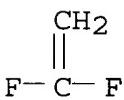
CMF C3 H4 O2



CM 2

CRN 75-38-7

CMF C2 H2 F2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 72
 ST grafted polyvinylidenedifluoride electrode binder lithium
battery
 IT **Battery** anodes
 (grafted polyvinylidenedifluoride-based polymers in lithium
 batteries)
 IT Secondary **batteries**
 (lithium; grafted polyvinylidenedifluoride-based polymers in
 lithium **batteries**)
 IT 7782-42-5, Graphite, uses 12190-79-3, cobalt lithium oxide colio2
 109955-89-7, Acrylic acid-vinylidene fluoride graft
 copolymer 120543-88-6
 (grafted polyvinylidenedifluoride-based polymers in lithium
 batteries)

L47 ANSWER 3 OF 14 HCA COPYRIGHT 2003 ACS
 135:181479 fluoropolymer composition containing ionic or ionizable groups and their manufacture. Hedhli, Lofti; Billon, Laurent (Atofina Chemicals, Inc., USA). PCT Int. Appl. WO 2001060872 A1 20010823, 21 pp. DESIGNATED STATES: W: CA, CN, IL, IN, JP, KR, MX, RU; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US4995 20010215. PRIORITY: US 2000-PV182732 20000215; US 2001-774266 20010130.

AB The compn. is manufd. by blending .gtoreq.1 acrylic resin or vinyl resin having .gtoreq.1 ionic or ionizable group and .gtoreq.1 thermoplastic fluoropolymer, or polymg. .gtoreq.1 acrylic and/or vinyl monomer having .gtoreq.1 ionic or ionizable group in .gtoreq.1 fluoropolymer. The fluoropolymer compns. are useful in a variety of applications such as polyelectrolyte membranes in **batteries** and fuel cells having good chem. resistance and/or high mech. strength.

IT 355418-86-9P 355418-87-0P 355418-88-1P

355418-89-2P 355418-90-5P

(fluoropolymer compn. contg. ionic or ionizable groups for polyelectrolyte membranes)

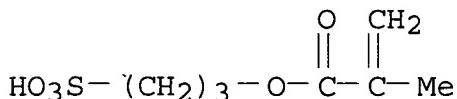
RN 355418-86-9 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene and 3-sulfopropyl 2-methyl-2-propenoate, graft (9CI) (CA INDEX NAME)

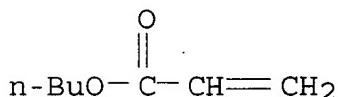
CM 1

CRN 7582-21-0

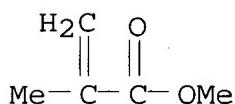
CMF C7 H12 O5 S



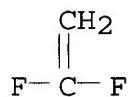
CM 2

CRN 141-32-2
CMF C7 H12 O2

CM 3

CRN 80-62-6
CMF C5 H8 O2

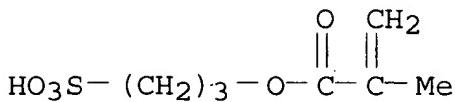
CM 4

CRN 75-38-7
CMF C2 H2 F2

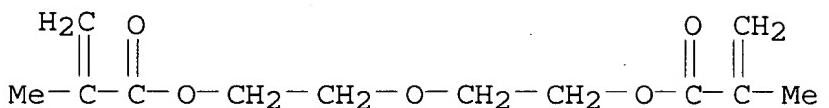
RN 355418-87-0 HCA
 CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer
 with butyl 2-propenoate, 1,1-difluoroethene, methyl
 2-methyl-2-propenoate and 3-sulfopropyl 2-methyl-2-propenoate (9CI)
 (CA INDEX NAME)

CM 1

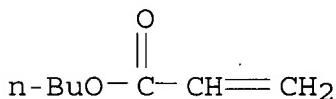
CRN 7582-21-0
CMF C7 H12 O5 S



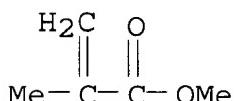
CM 2

CRN 2358-84-1
CMF C12 H18 O5

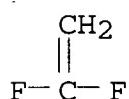
CM 3

CRN 141-32-2
CMF C7 H12 O2

CM 4

CRN 80-62-6
CMF C5 H8 O2

CM 5

CRN 75-38-7
CMF C2 H2 F2

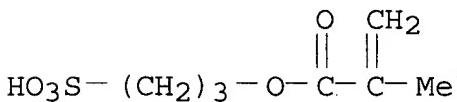
RN 355418-88-1 HCA

CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, methyl 2-methyl-2-propenoate, 2-propenamide and 3-sulfopropyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 7582-21-0

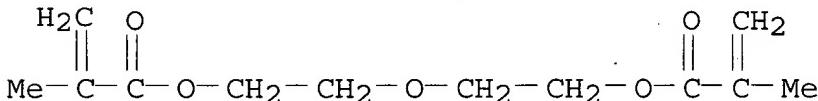
CMF C7 H12 O5 S



CM 2

CRN 2358-84-1

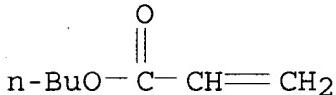
CMF C12 H18 O5



CM 3

CRN 141-32-2

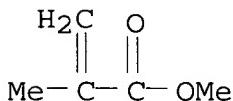
CMF C7 H12 O2



CM 4

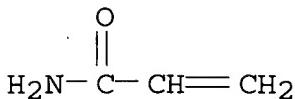
CRN 80-62-6

CMF C5 H8 O2



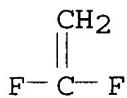
CM 5

CRN 79-06-1
 CMF C3 H5 N O



CM 6

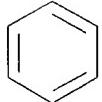
CRN 75-38-7
 CMF C2 H2 F2



RN 355418-89-2 HCA
 CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer with butyl 2-propenoate, 1,1-difluoroethene, ethenylbenzenesulfonic acid and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 26914-43-2
 CMF C8 H8 O3 S
 CCI IDS

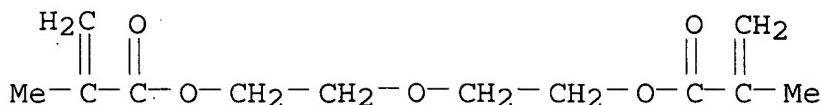


D1-CH=CH₂

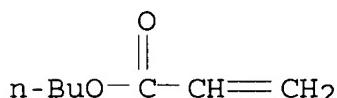
D1-SO₃H

CM 2

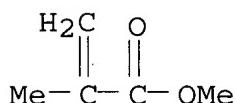
CRN 2358-84-1
 CMF C12 H18 O5



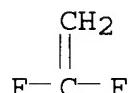
CM 3

CRN 141-32-2
CMF C7 H12 O2

CM 4

CRN 80-62-6
CMF C5 H8 O2

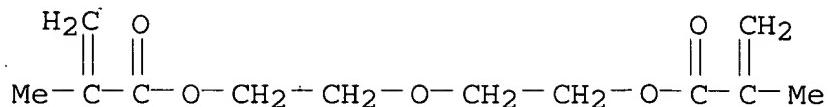
CM 5

CRN 75-38-7
CMF C2 H2 F2

RN 355418-90-5 HCA
 CN 2-Propenoic acid, 2-methyl-, oxydi-2,1-ethanediyl ester, polymer
 with butyl 2-propenoate, 1,1-difluoroethene, ethenesulfonic acid and
 methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

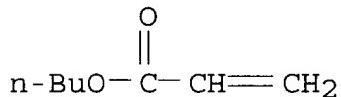
CRN 2358-84-1
CMF C12 H18 O5



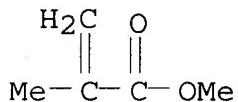
CM 2

CRN 1184-84-5
CMF C2 H4 O3 S

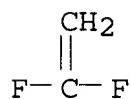
CM 3

CRN 141-32-2
CMF C7 H12 O2

CM 4

CRN 80-62-6
CMF C5 H8 O2

CM 5

CRN 75-38-7
CMF C2 H2 F2

IC ICM C08F008-00
 ICS C08G063-48; C08G063-91; C08L023-00; C08L023-04; C08L027-12;
 C08L033-02; C08L033-06; H01M002-00; H01M002-02; H01M002-16;

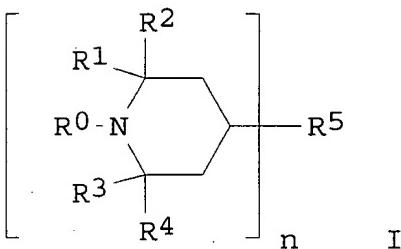
H01M004-86; H01M004-90; H01M004-96
 CC 37-6 (Plastics Manufacture and Processing)
 Section cross-reference(s): 38, 76
 IT Fuel cells
 Ion exchange membranes
 Membrane electrodes
Primary batteries
 (fluoropolymer compn. contg. ionic or ionizable groups for
 polyelectrolyte membranes)
 IT **Electrolytic cells**
 (membrane; fluoropolymer compn. contg. ionic or ionizable groups
 for polyelectrolyte membranes)
 IT 355418-86-9P 355418-87-0P 355418-88-1P
 355418-89-2P 355418-90-5P
 (fluoropolymer compn. contg. ionic or ionizable groups for
 polyelectrolyte membranes)

L47 ANSWER 4 OF 14 HCA COPYRIGHT 2003 ACS

135:125019 Secondary nonaqueous **electrolyte batteries**

Yamada, Manabu; Kubota, Naohiro (Denso Co., Ltd., Japan; Asahi Denka Kogyo K. K.). Jpn. Kokai Tokkyo Koho JP 2001210314 A2 20010803, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-22246 20000131.

GI



AB The **batteries** use cathodes, anodes, and/or separators contg. a piperidine deriv. I, where R0 = O free radical, HO, alkoxy, or polymer group connected by ether group; R1-4 = C1-4 alkyl groups, R5 = H, HO, or an n valent org. group, n = integer 1-100.

IT 351182-52-0
 (secondary lithium **batteries** contg. piperidine deriv.
 additives in electrodes and/or separators)

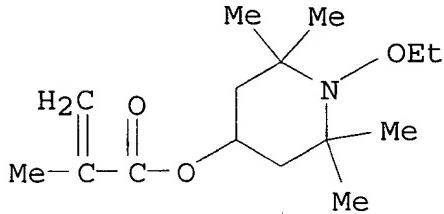
RN 351182-52-0 HCA

CN 2-Propenoic acid, 2-methyl-, 1-ethoxy-2,2,6,6-tetramethyl-4-piperidinyl ester, polymer with 1,1-difluoroethene and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

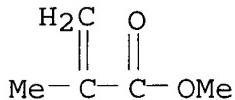
CM 1

CRN 351182-51-9

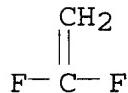
CMF C15 H27 N O3



CM 2

CRN 80-62-6
CMF C5 H8 O2

CM 3

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-02
ICS H01M004-62; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST Secondary nonaq **electrolyte battery** piperidine deriv additive; electrode secondary **battery** piperidine deriv additive; separator secondary **battery** piperidine deriv additive
 IT Secondary **batteries**
 (lithium; secondary lithium **batteries** contg. piperidine deriv. additives in electrodes and/or separators)
 IT 7440-44-0, Carbon, uses
 (anodes contg. piperidine deriv. additives for secondary lithium **batteries**)
 IT 12031-65-1, Lithium nickel oxide (LiNiO₂)
 (cathodes contg. piperidine deriv. additives for secondary lithium **batteries**)
 IT 2226-96-2D, reaction products with EPDM rubber 2516-92-9
 6599-87-7D, reaction products with EPDM rubber 66569-11-7

68393-07-7 122586-52-1 122586-96-3 **351182-52-0**

351182-53-1 351182-54-2

(secondary lithium **batteries** contg. piperidine deriv.
additives in electrodes and/or separators)

IT 9002-88-4, Polyethylene
(separators contg. piperidine deriv. additives for secondary
lithium **batteries**)

L47 ANSWER 5 OF 14 HCA COPYRIGHT 2003 ACS

135:26880 Porous pattern forming material, method for pattern formation using same, and method for manufacture of **electrolysis cells**, filters, porous carbon materials, capacitor, and catalyst layer of fuel **batteries** using same. Hiraoka, Toshiro; Asakawa, Koji; Akasaka, Yoshihiro; Hotta, Yasuyuki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001151834 A2 20010605, 62 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-169263 20000606. PRIORITY: JP 1999-159479 19990607; JP 1999-262326 19990916.

AB The title material contains a block copolymer or a graft copolymer for forming pattern of a microphase sepn. structure, wherein the .gtoreq.2 kinds of the polymer chains of the block copolymer or the graft copolymer has .gtoreq.1.4 of the monomer based N/(Nc-No) where N is total element no. in the monomer, Nc is the no. of carbon in the monomer, and No is the no. of oxygen in the monomer. The method provides the 2- and 3-dimensional pattern in nanometer size with the simple process.

IT **343253-68-9P**
(copolymer for porous pattern forming material)

RN 343253-68-9 HCA

IC ICM C08F297-02

ICS C08F299-00; C08G081-02; C08G083-00; C08J009-26; H01L021-3065;
H01M002-16; H01M004-88; H01M004-96; C01B031-02; C04B035-52;
H01M004-58; H01M010-40; C08L101-00

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 52, 76

IT Photolithography
(porous pattern forming material, method for pattern formation using same, and method for manuf. of **electrolysis cells**, filters, porous carbon materials, capacitor, and catalyst layer of fuel **batteries** using same)

IT 25014-10-2P, Isoprene-methyl methacrylate copolymer 25014-15-7P,
2-Vinylpyridine homopolymer 25014-41-9P, Acrylonitrile homopolymer
26353-79-7P, Acrylonitrile-propylene oxide copolymer 32197-39-0P,
3,3',4,4'-Biphenyltetracarboxylic acid dianhydride-1,4-phenylenediamine copolymer, sru 106911-77-7P, Styrene-methyl methacrylate block copolymer 108614-86-4P, Styrene-2-vinylpyridine block copolymer 108689-93-6P, Ethylene oxide-acrylonitrile block copolymer 109584-39-6P, Ethylene oxide-styrene graft copolymer 120964-16-1P, Acrylic acid-methyl methacrylate block copolymer 127381-17-3P, Ethylene oxide-hexamethylcyclotrisiloxane block copolymer 339315-59-2P, 1,2-Butadiene-ethylene oxide block

copolymer 343253-67-8P 343253-68-9P 343253-69-0P
 343253-70-3P 343253-71-4P 343253-72-5P 343253-73-6P
 343253-74-7P 343253-76-9P 343253-77-0P 343253-78-1P.
 343253-79-2P

(copolymer for porous pattern forming material)

L47 ANSWER 6 OF 14 HCA COPYRIGHT 2003 ACS

133:240613 Secondary nonaqueous **electrolyte batteries**

koishi, Toshio; Minegishi, Seiichi (Central Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000251897 A2 20000914, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-48204 19990225.

AB The **batteries** use electrodes having a binder mixt. contg. a vinylidene fluoride-C₂ClF₃-unsatd. peroxide copolymer, or olefin grafted copolymer formed by breaking up the peroxide site, and an isocyanate or amino resin.

IT 292182-19-5

(compns. of polymer binder mixts. for secondary lithium **batteries**)

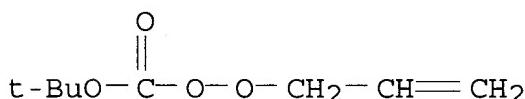
RN 292182-19-5 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with chlorotrifluoroethene, 1,1-difluoroethene and O-(1,1-dimethylethyl) OO-2-propenyl carbonoperoxoate, graft (9CI) (CA INDEX NAME)

CM 1

CRN 121537-65-3

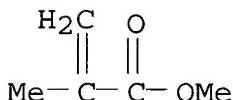
CMF C8 H14 O4



CM 2

CRN 80-62-6

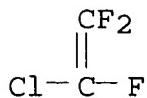
CMF C5 H8 O2



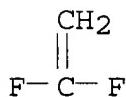
CM 3

CRN 79-38-9

CMF C2 Cl F3



CM 4

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01M004-62
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary nonaq **battery** electrode polymer binder compn;
 vinylidene fluoride copolymer binder mixt **battery**
 electrode; chlorotrifluoroethene copolymer binder mixt
battery electrode; unsatd peroxide copolymer binder mixt
battery electrode; isocyanate polymer binder mixt
battery electrode; amino resin polymer binder mixt
battery electrode
 IT **Battery** electrodes
 (comps. of polymer binder mixts. for secondary lithium
 batteries)
 IT Aminoplasts
 Fluoropolymers, uses
 (comps. of polymer binder mixts. for secondary lithium
 batteries)
 IT 9003-08-1, Nikalac mx 40 24937-79-9, Solef 1010 86752-86-5,
 Desmodur Z 4370 109190-12-7, Coronate 2507 110872-66-7,
 tert-Butyl peroxyallyl carbonate-chlorotrifluoroethylene-vinylidene
 fluoride graft copolymer 144245-98-7, Coronate HX
292182-19-5
 (comps. of polymer binder mixts. for secondary lithium
 batteries)
 L47 ANSWER 7 OF 14 HCA COPYRIGHT 2003 ACS
 133:180339 Polymer **electrolyte** lithium **batteries**.
 Utagawa, Reiko (Japan). Jpn. Kokai Tokkyo Koho JP 2000228218 A2
 20000815, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
 1999-65380 19990204.
 AB The **batteries** use a polymer **electrolyte** contg. a
 copolymer of vinylidene fluoride with Li .alpha.-fluoroacrylate or
 Li trifluoromethacrylate and an org. solvent.
 IT **288569-86-8 288569-87-9**

(lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based
electrolytes for lithium batteries)

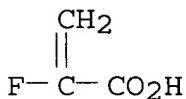
RN 288569-86-8 HCA

CN 2-Propenoic acid, 2-fluoro-, lithium salt, polymer with
 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 288569-85-7

CMF C3 H3 F O2 . Li

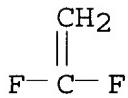


Li

CM 2

CRN 75-38-7

CMF C2 H2 F2



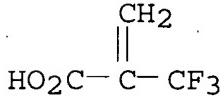
RN 288569-87-9 HCA

CN 2-Propenoic acid, 2-(trifluoromethyl)-, lithium salt, polymer with
 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

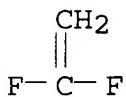
CRN 208849-71-2

CMF C4 H3 F3 O2 . Li



Li

CM 2

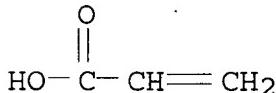
CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M010-40
ICS C08L027-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery electrolyte vinylidene fluoride lithium fluoroacrylate copolymer
 IT Battery electrolytes
 (lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based electrolytes for lithium batteries)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 21324-40-3, Lithium hexafluorophosphate **288569-86-8**
288569-87-9
 (lithium fluoro(meth)acrylate-vinylidene fluoride copolymer based electrolytes for lithium batteries)

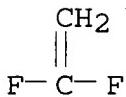
L47 ANSWER 8 OF 14 HCA COPYRIGHT 2003 ACS
 132:168810 Laminar batteries. Kaido, Hideki (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000067867 A2 20000303, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-236868 19980824.

AB The batteries use cathodes and/or anodes contg. an active mass, a nonaq. electrolyte soln, and a copolymer of a F contg. monomer and a 2nd monomer (I) of formula: -(CH₂CR(COOX))_n- on a collector; in which R and X are H or hydrocarbyl groups, and the mol. rato of I to the F contg. monomer is .ltoreq.0.2.
 IT 61778-05-0, Acrylic acid-vinylidene fluoride copolymer
 (electrodes contg. copolymers of fluoro and acrylic monomers for laminar batteries)
 RN 61778-05-0 HCA
 CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2

CM 2

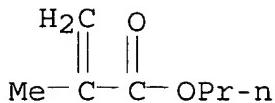
CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M004-62
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST laminar **battery** electrode fluoro acrylate monomer copolymer
 IT Carbon fibers, uses
 (electrodes contg. copolymers of fluoro and acrylic monomers for laminar **batteries**)
 IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 25134-60-5, Acrylic acid-tetrafluoroethylene copolymer 61778-05-0, Acrylic acid-vinylidene fluoride copolymer 82077-22-3
 (electrodes contg. copolymers of fluoro and acrylic monomers for laminar **batteries**)

L47 ANSWER 9 OF 14 HCA COPYRIGHT 2003 ACS
 130:198827 Vinylidene fluoride polymer solid **electrolytes** and secondary **batteries** using them. Amano, Kosuke; Yagata, Hiroshi; Sakauchi, Hiroshi (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11053936 A2 19990226 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-210850 19970805.
 AB The **electrolytes** comprise vinylidene fluoride polymers having side chains introduced by electron-beam radiation and **electrolytic** org. solvent solns. contg. ionic compds. The **electrolytes** show high ionic cond. and good mech. strength.
 IT 220864-69-7P
 (vinylidene fluoride polymer solid **electrolytes** for secondary **batteries**)
 RN 220864-69-7 HCA
 CN 2-Propenoic acid, 2-methyl-, hexafluoropropyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

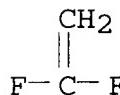
CM 1

CRN 65444-76-0
CMF C7 H6 F6 O2
CCI IDS



6 (D1-F)

CM 2

CRN 75-38-7
CMF C2 H2 F2

- IC ICM H01B001-12
 ICS C08F002-54; C08K003-00; C08L051-06; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 35, 38, 76
 ST vinylidene fluoride polymer solid **electrolyte**
 battery; electron beam polymn vinylidene fluoride
 electrolyte; lithium secondary **battery**
 polyvinylidene fluoride **electrolyte**
 IT Fluoropolymers, uses
 (acrylic; vinylidene fluoride polymer solid **electrolytes**
 for secondary **batteries**)
 IT Secondary **batteries**
 (lithium; vinylidene fluoride polymer solid **electrolytes**
 for secondary **batteries**)
 IT Electron beams
 (radical polymn. induced by; vinylidene fluoride polymer solid
 electrolytes for secondary **batteries**)
 IT Polymerization
 (radical, electron beam-induced; vinylidene fluoride polymer
 solid **electrolytes** for secondary **batteries**)
 IT **Battery electrolytes**
 Ionic conductors
 Polymer **electrolytes**
 (vinylidene fluoride polymer solid **electrolytes** for
 secondary **batteries**)
 IT 12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium
 manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide
 (CoLiO₂)
 (cathodes; vinylidene fluoride polymer solid **electrolytes**

- IT for secondary batteries)
 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 109-99-9, Tetrahydrofuran, uses 623-53-0, Methyl ethyl carbonate
 (solvents; vinylidene fluoride polymer solid **electrolytes**
 for secondary batteries)
- IT 220864-68-6P 220864-69-7P
 (vinylidene fluoride polymer solid **electrolytes** for
 secondary batteries)
- IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium
 bis(trifluoromethanesulfonyl)imide 132404-42-3, Lithium
 tris(trifluoromethylsulfonyl)methanide 132843-44-8, Lithium
 bis(pentafluoroethylsulfonyl)imide 210406-60-3
 (vinylidene fluoride polymer solid **electrolytes** for
 secondary batteries)

L47 ANSWER 10 OF 14 HCA COPYRIGHT 2003 ACS

130:58415 Electrochemical monitoring of the behavior of organically
 coated aluminum during atmospheric exposure. Pistorius, P. C.;
 Leitch, J. E. (Department of Materials Science and Metallurgical
 Engineering, University of Pretoria, S. Afr.). International
 Corrosion Congress, Proceedings, 13th, Melbourne, Nov., 1996, Paper
 92/1-Paper 92/8. Australasian Corrosion Association: Clayton,
 Australia. (English) 1996. CODEN: 66UFAT.

AB The condition of organically coated aluminum following atm. exposure
 was quantified by means of the film resistance (derived from
 potential pulse measurements) and water uptake (derived from
 capacitance measurements). Rapid changes in the film resistance
 following exposure to the **electrolyte**, large differences
 in resistance between samples from the same coupon, and decoration
 of defects by copper plating indicate that the coatings generally
 contain defects. For this reason, capacitance-based measurements
 are not useful to characterize the protection offered by the
 coating, since the capacitance reflects the av. behavior of the
 coating rather than the role of defects. The value of the film
 resistance after 48 h of **electrolyte** exposure is similar
 to that after exposure for up to 1000 h.

IT 61778-05-0, Acrylic acid vinylidene fluoride copolymer
 (electrochem. monitoring during atm. exposure of aluminum coated
 by)

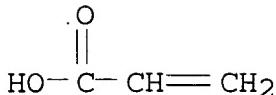
RN 61778-05-0 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene (9CI) (CA INDEX
 NAME)

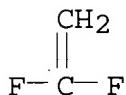
CM 1

CRN 79-10-7

CMF C3 H4 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

CC 72-6 (Electrochemistry)

Section cross-reference(s): 56

IT 61778-05-0, Acrylic acid vinylidene fluoride copolymer
(electrochem. monitoring during atm. exposure of aluminum coated by)

L47 ANSWER 11 OF 14 HCA COPYRIGHT 2003 ACS

128:232827 Nonaqueous **batteries**containing fluoropolymer binders. Oishi, Toshio; Kawamura,
Katsunori (Central Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho
JP 10064547 A2 19980306 Heisei, 7 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1996-222003 19960823.AB The title **batteries** use anode- and/or cathode active mass
contg. copolymers of vinylidene fluoride, chlorotrifluoroethylene,
and a monomer having double bond and peroxy group as binders. The
binder resins have good adhesion with current collectors and
resulting **batteries** have long cycle life.

IT 204714-24-9P 204714-27-2P 204714-29-4P

204714-30-7P

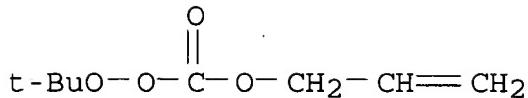
(fluoropolymer binders in nonaq. **batteries** for adhesion
and long cycle life)

RN 204714-24-9 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl)
O-2-propenyl carbonoperoxoate and ethyl 2-propenoate, graft (9CI)
(CA INDEX NAME)

CM 1

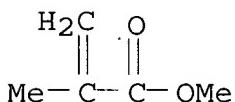
CRN 65700-08-5
CMF C8 H14 O4



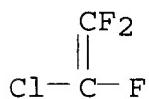
CM 2

CRN 140-88-5
CMF C5 H8 O2

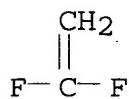
CM 3

CRN 80-62-6
CMF C5 H8 O2

CM 4

CRN 79-38-9
CMF C2 Cl F3

CM 5

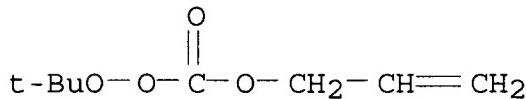
CRN 75-38-7
CMF C2 H2 F2

RN 204714-27-2 HCA
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with

chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl) O-2-propenyl carbonoperoxoate and 2-hydroxyethyl 2-propenoate, graft (9CI) (CA INDEX NAME)

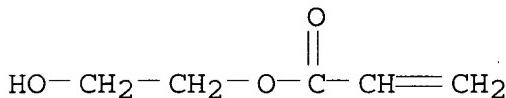
CM 1

CRN 65700-08-5
CMF C8 H14 O4



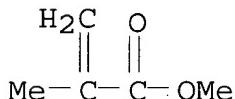
CM 2

CRN 818-61-1
CMF C5 H8 O3



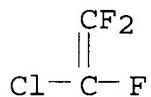
CM 3

CRN 80-62-6
CMF C5 H8 O2



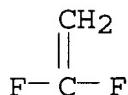
CM 4

CRN 79-38-9
CMF C2 Cl F3



CM 5

CRN 75-38-7
CMF C2 H2 F2



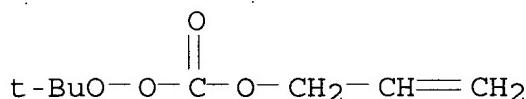
RN 204714-29-4 HCA

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl)
O-2-propenyl carbonoperoxoate and 2-propenoic acid, graft (9CI) (CA
INDEX NAME)

CM 1

CRN 65700-08-5

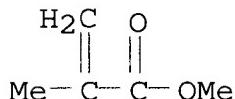
CMF C8 H14 O4



CM 2

CRN 80-62-6

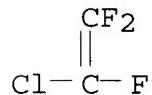
CMF C5 H8 O2



CM 3

CRN 79-38-9

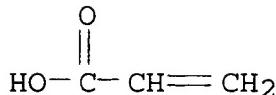
CMF C2 Cl F3



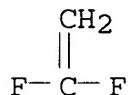
CM 4

CRN 79-10-7

CMF C3 H4 O2

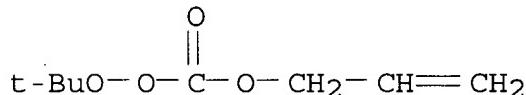


CM 5

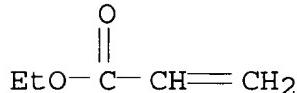
CRN 75-38-7
CMF C2 H2 F2

RN 204714-30-7 HCA
 CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with
 chlorotrifluoroethene, 1,1-difluoroethene, OO-(1,1-dimethylethyl)
 O-2-propenyl carbonoperoxoate, ethyl 2-propenoate and 2-propenoic
 acid, graft (9CI) (CA INDEX NAME)

CM 1

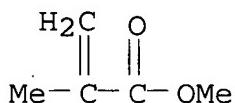
CRN 65700-08-5
CMF C8 H14 O4

CM 2

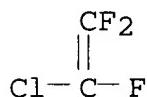
CRN 140-88-5
CMF C5 H8 O2

CM 3

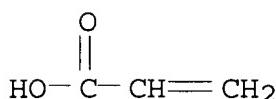
CRN 80-62-6
CMF C5 H8 O2



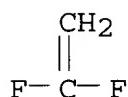
CM 4

CRN 79-38-9
CMF C2 Cl F3

CM 5

CRN 79-10-7
CMF C3 H4 O2

CM 6

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M004-62

ICS H01M004-02; H01M004-58; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s) : 38

ST fluoropolymer binder nonaq **battery** electrodeIT **Battery** anodes **Battery** cathodes

Binders

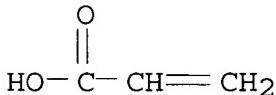
(fluoropolymer binders in nonaq. **batteries** for adhesion and long cycle life)

IT Fluoropolymers, uses

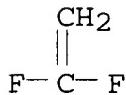
(fluoropolymer binders in nonaq. **batteries** for adhesion

- IT and long cycle life)
 Secondary batteries
 (lithium; fluoropolymer binders in nonaq. batteries for adhesion and long cycle life)
- IT 89823-13-2P 110872-66-7P 204714-24-9P
 204714-27-2P 204714-29-4P 204714-30-7P
 204714-32-9P
 (fluoropolymer binders in nonaq. batteries for adhesion and long cycle life)
- L47 ANSWER 12 OF 14 HCA COPYRIGHT 2003 ACS
 127:222978 Polymer electrolyte compositions and batteries thereof. Kronfli, Esam (AEA Technology PLC, Japan). Jpn. Kokai Tokkyo Koho JP 09213370 A2 19970815 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-17945 19970131. PRIORITY: GB 1996-1890 19960131; GB 1996-18695 19960906.
- AB The electrolyte compns. contain a salt, an org. solvent sol. for the salt, and a vinylidene fluoride based polymer, which is grafted by a mono-unsatd. carboxylic acid, sulfonic acid, ester, or amide monomer. Li batteries use these electrolyte compns. or use electrodes contg. these electrolytes.
- IT 109955-89-7, Acrylic acid-vinylidene fluoride graft copolymer
 (compns. and manuf. of polymer electrolytes for secondary lithium batteries)
- RN 109955-89-7 HCA
 CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2

CM 2

CRN 75-38-7
CMF C2 H2 F2

- IT 113253-83-1
 (graft; compns. and manuf. of polymer electrolytes for

secondary lithium **batteries**)

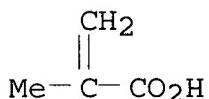
RN 113253-83-1 HCA

CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-difluoroethene, graft
(9CI) (CA INDEX NAME)

CM 1

CRN 79-41-4

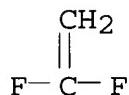
CMF C4 H6 O2



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M010-40

ICS C08F259-08

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

ST lithium **battery** polyvinylidene fluoride
electrolyte compn; grafted polyvinylidene fluoride
electrolyte lithium **battery**

IT **Battery** anodes
(compns. and manuf. of polymer **electrolytes** for
graphite anodes in secondary lithium **batteries**)

IT **Battery** cathodes
(compns. and manuf. of polymer **electrolytes** for lithium
nickel oxide cathodes in secondary lithium **batteries**)

IT **Battery electrolytes**
(compns. and manuf. of polymer **electrolytes** for
secondary lithium **batteries**)

IT 7782-42-5, Graphite, uses
(compns. and manuf. of polymer **electrolytes** for
graphite anodes in secondary lithium **batteries**)

IT 39300-70-4, Lithium nickel oxide
(compns. and manuf. of polymer **electrolytes** for lithium
nickel oxide cathodes in secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
109-99-9, Thf, uses 127-19-5, Dimethyl acetamide 143-24-8,
Tetraglyme 7791-03-9, Lithium perchlorate 90076-65-6
109955-89-7, Acrylic acid-vinylidene fluoride graft

copolymer

(compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)

IT 113253-83-1

(graft; compns. and manuf. of polymer **electrolytes** for secondary lithium **batteries**)

L47 ANSWER 13 OF 14 HCA COPYRIGHT 2003 ACS

127:182290 Counterion transport numbers of poly(acrylic acid)-grafted porous ion-exchange membranes as detd. from current step measurements. Kontturi, K.; Mafe, S.; Manzanares, J. A.; Sundholm, G.; Vapola, R. (Dep. of Thermodynamics, Fac. of Phys., Univ. of Valencia, Burjasot, E-46100, Spain). Electrochimica Acta, 42(16), 2569-2575 (English) 1997. CODEN: ELCAAV. ISSN: 0013-4686.

Publisher: Elsevier.

AB The effect of an elec. current on the concn. polarization of the external bathing solns. and the perm-selectivity was studied of porous ion-exchange membranes - poly(vinylidene fluoride) membranes graft modified with poly(acrylic acid). The exptl. approach is based on the transient behavior of the total elec. potential drop through the membrane cell when a current step is imposed from external nonpolarizable electrodes. When this voltage drop is recorded as a function of time, a transition time characteristic of each membrane system was obtained. From this time, the counterion transport no. for the salt soln. (KCl-H₂O) in the membrane can be obtained. The theor. modeling is based on the time-dependent Nernst-Planck equations. The transport no., and then the membrane perm-selectivity, decreases with the elec. current. The higher the membrane grafting ratio and the lower the external salt concn. the larger the perm-selectivity changes.

IT 109955-89-7

(counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

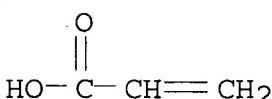
RN 109955-89-7 HCA

CN 2-Propenoic acid, polymer with 1,1-difluoroethene, graft (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

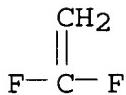
CMF C₃ H₄ O₂



CM 2

CRN 75-38-7

CMF C2 H2 F2



CC 72-2 (Electrochemistry)

Section cross-reference(s): 65, 66, 76

IT Electrolytic polarization

(concn.; counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

IT 7447-40-7, Potassium chloride, properties 66796-30-3, Nafion 117
109955-89-7

(counterion transport nos. of acrylic acid-vinylidene fluoride graft copolymer porous ion-exchange membranes as detd. from current step measurements in KCl soln.)

L47 ANSWER 14 OF 14 HCA COPYRIGHT 2003 ACS

87:168952 Composite membrane. Sata, Toshikatsu; Motani, Kensuke; Nakahara, Akihiko; Murata, Yasuo (Tokuyama Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 52075678 19770624 Showa, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-151854 19751222.

AB Composite membranes used as diaphragms for **electrolysis** of NaCl and having good current efficiency were prep'd. by bonding polymers to fluororesin cation exchangers such as hydrolyzed perfluoro(3,6-dioxa-4-methyl-7-octenesulfonyl fluoride)-tetrafluoroethylene copolymer (I) [26654-97-7] in the presence of vinyl monomers. Thus, a diaphragm having current efficiency 92-3% for 3 months was prep'd. by coating a hydrolyzed I cation exchanger with a mixt. of 55% divinylbenzene 5, styrene 5, methacrylic acid 2.5, 4-vinylpyridine 2.5, tert-Bu lauryl peroxide 0.3, and a PVC paste resin 1 part and heating at 110.degree. to form a polymer [64422-42-0] layer.IT **57592-88-8**(composites with hydrolyzed fluoro(dioxydemethylsulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)

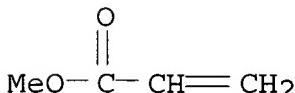
RN 57592-88-8 HCA

CN 2-Propenoic acid, methyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

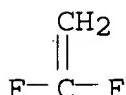
CM 1

CRN 96-33-3

CMF C4 H6 O2



CM 2

CRN 75-38-7
CMF C2 H2 F2

- IC C08J005-22
 CC 37-3 (Plastics Fabrication and Uses)
 ST sodium chloride **electrolysis** diaphragm; fluoropolymer composite **electrolysis** diaphragm; vinyl polymer fluoropolymer composite; membrane fluoropolymer polyvinyl composite
 IT Vinyl compounds, polymers
 (composites with fluoropolymers, for diaphragms for sodium chloride **electrolysis**)
 IT Fluoropolymers
 (composites with vinylpolymers, for diaphragms for sodium chloride **electrolysis**)
 IT **Electrolytic cells**
 (for brine **electrolysis**, diaphragms for)
 IT Rubber, butadiene-styrene, uses and miscellaneous
 (reaction products with vinyl compds., chlorosulfonated poly(vinylidene fluoride)-contg., composite with chlorosulfonated poly(vinylidene fluoride), for diaphragms for potassium chloride **electrolysis**)
 IT Rubber, neoprene, compounds
 (reaction products with vinyl compds., fluoroethylene copolymer-contg., for diaphragms for sodium chloride **electrolysis**)
 IT Rubber, synthetic
 (chlorosulfonated polyethylene, reaction products with vinyl compds., fluoro polymer-contg., for diaphragms for sodium chloride **electrolysis**)
 IT 24937-79-9D, chlorosulfonated
 (composite with butadiene-divinylbenzene-methacrylic acid-stearyl methacrylate-styrene copolymer, for diaphragms for sodium chloride **electrolysis**)
 IT 64422-41-9
 (composite with chlorotrifluoroethylene-maleic anhydride copolymer, for diaphragms for sodium chloride **electrolysis**)
 IT 64368-64-5
 (composite with divinylbenzene-methacrylic acid-propylene-styrene copolymer, for diaphragms for sodium chloride **electrolysis**)
 IT 25684-76-8
 (composite with fluoropolymer, for diaphragms for sodium chloride

- electrolysis)
- IT 25038-89-5
 (composite with hydrolyzed fluoro(dioxymethylsulfonate fluoride)-tetrafluoride copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 64422-40-8
 (composites with chlorosulfonated poly(vinylpyridene fluoride), diaphragms for chloride **electrolysis**)
- IT 32360-05-7D, polymer with butadiene-styrene rubber and divinylbenzene and methacrylic acid and styrene
 (composites with chlorosulfonated poly(vinylpyridine fluoride), for diaphragms for potassium chloride **electrolysis**)
- IT 26654-97-7D, hydrolyzed
 (composites with divinylbenzene-methacrylic acid-styrene-vinyl chloride-vinylpyridine copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 57592-88-8
 (composites with hydrolyzed fluoro(dioxydemethylsulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 79-10-7D, polymer with divinylbenzene and neoprene and styrene
 100-42-5D, polymer with acrylic acid and divinylbenzene and neoprene
 (composites with hydrolyzed perfluoro(dioxymethyloctanesulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 79-41-4D, polymer with chlorosulfonated polyethylene and divinylbenzene and vinylpyridine 100-43-6D, polymer with chlorosulfonated polyethylene and divinylbenzene and methacrylic acid 1321-74-0D, polymer with chlorosulfonated polyethylene and methacrylic acid and vinylpyridine 64422-32-8
 (composites with perfluoro(dioxymethyloctanesulfonate fluoride)-tetrafluoroethylene copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 63511-67-1
 (composites with tetrafluoroethylene-vinylpyridine fluoride copolymer, for diaphragms for sodium chloride **electrolysis**)
- IT 7447-40-7, reactions 7647-14-5, reactions
 (**electrolysis** of, diaphragms for, fluoropolymer composites as)

=> d 148 1-24 ti

- L48 ANSWER 1 OF 24 HCA COPYRIGHT 2003 ACS
 TI Water-repellent articles having coating layers with improved adhesion
- L48 ANSWER 2 OF 24 HCA COPYRIGHT 2003 ACS
 TI Manufacture of decorated moldings
- L48 ANSWER 3 OF 24 HCA COPYRIGHT 2003 ACS

- TI Propylene polymer sheets with good gloss for thermoforming
- L48 ANSWER 4 OF 24 HCA COPYRIGHT 2003 ACS
TI Slab waveguide-type optical modulators using optically active and nonlinear polymers
- L48 ANSWER 5 OF 24 HCA COPYRIGHT 2003 ACS
TI Coated articles and their repairing process
- L48 ANSWER 6 OF 24 HCA COPYRIGHT 2003 ACS
TI Inorganic compound-coated multilayer films with good moisture resistance
- L48 ANSWER 7 OF 24 HCA COPYRIGHT 2003 ACS
TI Electrostatographic development carrier, manufacture of the same and imaging method
- L48 ANSWER 8 OF 24 HCA COPYRIGHT 2003 ACS
TI Durable coated metals with corrosion-resistance and processability and snow-removing properties
- L48 ANSWER 9 OF 24 HCA COPYRIGHT 2003 ACS
TI Weather-resistant printed multilayer polyolefin-covered steel plates
- L48 ANSWER 10 OF 24 HCA COPYRIGHT 2003 ACS
TI Optically dissimilar composition for polymeric reflective bodies
- L48 ANSWER 11 OF 24 HCA COPYRIGHT 2003 ACS
TI Decorative steel sheets coated with olefin
- L48 ANSWER 12 OF 24 HCA COPYRIGHT 2003 ACS
TI Optically dissimilar compositions for polymeric reflective bodies
- L48 ANSWER 13 OF 24 HCA COPYRIGHT 2003 ACS
TI Sprayable composition for making polymeric glove or coating on skin using acetone solvent
- L48 ANSWER 14 OF 24 HCA COPYRIGHT 2003 ACS
TI Electrophotographic photoreceptor with photosensitive layer using fluorine-containing block copolymer
- L48 ANSWER 15 OF 24 HCA COPYRIGHT 2003 ACS
TI Erasable laser recording material
- L48 ANSWER 16 OF 24 HCA COPYRIGHT 2003 ACS
TI Thermal degradation of copolymers of vinyl fluoride with methacrylic acid and its methyl and butyl esters
- L48 ANSWER 17 OF 24 HCA COPYRIGHT 2003 ACS
TI Carriers for development of electrostatic images
- L48 ANSWER 18 OF 24 HCA COPYRIGHT 2003 ACS

TI Synthetic resin for use as an adhesive in preparing composite material comprising poly(vinylidene fluoride) and poly(vinyl chloride) and this composite

L48 ANSWER 19 OF 24 HCA COPYRIGHT 2003 ACS

TI Radiation degradation of addition polymers containing fluorine. Search for improved lithographic resists

L48 ANSWER 20 OF 24 HCA COPYRIGHT 2003 ACS

TI Synthetic resin for use as an adhesive

L48 ANSWER 21 OF 24 HCA COPYRIGHT 2003 ACS

TI Modification of poly(vinylidene fluoride)

L48 ANSWER 22 OF 24 HCA COPYRIGHT 2003 ACS

TI Use of infrared specular reflectance in study of ultraviolet degradation of polymer films

L48 ANSWER 23 OF 24 HCA COPYRIGHT 2003 ACS

TI Grafting polymeric films

L48 ANSWER 24 OF 24 HCA COPYRIGHT 2003 ACS

TI Homopolymers and copolymers of vinylidene fluoride